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ABSTRACT

The strategies and resources necessary to achieve operational, self-supporting status in the use of satellite-based delivery systems for continuing education and training are described in the context of a four year plan. User populations include vocational rehabilitation, aging, Indian-controlled community colleges, other community colleges, and libraries. A detailed needs analysis for each of the user groups is presented, followed by descriptions of the training needs for these groups, their financial base, and the capabilities of the group sponsoring institutions. Various delivery systems applicable to educational programming are also discussed, including microwave transmission, satellites, telephone, cable television, and combinations of these. The Denver Research Institute's plan to use experimental satellites during the first year of the project and commercial systems thereafter is documented and the technological considerations are discussed. An overall organizational and management plan for the project is provided, including schedules and activities. A profile of each of the five year groups and letters of commitment are appended. The final part contains the four year budget. (RAO)

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TO
Technological Applications Division
National Institute of Education

Contract 400-77-0109

Satellite-Based Delivery of Continuing Education and Training Programs in Five User Communities

REPORT I: FOUR-YEAR OPERATIONAL PLAN

Parts 1-6

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March 1978

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PART 1. ABSTRACT

Making the assumptions that satellite-based delivery systems will be cost-effective for responding to demonstrated needs for continuing education and training and that it is important to have a single project that responds to these needs in non-integrated, currently diverse communities of interest, the Denver Research Institute (DRI) describes the strategies and resources necessary to achieve operational, self-supporting status for such a delivery system in five user communities to be aggregated.

Major problems in defining user needs include those deriving from the nature of the user communities being aggregated, changing technologies and associated costs, the increasing role of the commercial satellite sector and changes and uncertainties within federal government. Five user communities have been identified by DRI and a lead institution designated for each community. These lead institutions will participate in the DRI plan and provide representation on the DRI core management team. The five communities of users are vocational rehabilitation, aging, Indian-controlled community colleges, other community colleges and libraries. The needs of these communities, their financial base, and the capabilities of the lead institution designated for each community are fully described in the plan and also summarized in an Appendix.

The strategies suggested by DRI include achieving the effect of pooled federal funding among the user communities and assigning responsibility for basic operational tasks, e.g., content development and program production--to the user communities from the beginning of the project period. With respect to choice of satellites, the DRI strategy is to use CTS for short-term demonstrations at the end of the first year, then to shift to use of commercial satellites and to the Public Television Satellite System. Involvement with the commercial sector will be continuous throughout the project year with responsibility for liaison

shared between DRI and its technical subcontractor, the Public Service Satellite Consortium.

The management plan proposed by DRI is designed to be results-oriented; to integrate the project with education and training activities in the five user communities; to provide flexibility for modifying plans, programs and implementation efforts as needed; to encourage communications among members of the core management team and lead institutions through teleconferencing; to produce a system of accountability that can later be turned over to the user communities; to interface with the work of the external evaluator to be hired; and to disseminate the knowledge and information acquired throughout the five communities of interest and to educators, generally.

The project budget includes money for user community participation. Letters of agreement and subcontracts will be signed to finalize all commitments and cost-sharing arrangements. Policy, program and technical committees each will have responsibilities for specifying and achieving measurable objectives. An external advisory board will also be formed.

The DRI plan places priority on developing local and professional association support bases within each user community, on attracting non-NIE funding support within each user community, on building capacity and developing the necessary infrastructure within each user community, on linking the use of satellites for delivery of continuing education with other uses within each community, and on continuous review of project objectives, priorities, technical requirements and organizational structure.

Letters of commitment to the DRI/NIE plan show broad-based concern from key individuals expressed in terms of appreciation for the technology involved, for continuing education and training needs and for the effort, including cost-sharing, necessary to achieve operational, self-supporting status during a four-year period.

PART 2. USER NEEDS

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A. Introduction

Focus: Five user communities. Two trends have helped to make continuing education and training a top educational priority in this country. One is related to employment/credential demands, high unemployment rates, and an increasing awareness of the need to be occupationally flexible in order to stay fully employed and to take advantage of career opportunities. The other trend is the increasing technological capability for convenient, self-paced instruction. One of the more valuable of these technologies is telecommunications-based delivery such as by satellite.

Many researchers and planners tend to focus on a specific area of interest, e.g., engineers. The Denver Research Institute (DRI) believes that it is important to have a single project that attempts to deal with the continuing education and training needs of nonintegrated, currently diverse communities of interest. A major assumption is made that satellite-based delivery systems are an increasingly attractive option for satisfying these needs.

In presenting its four-year plan, "Satellite-based Delivery of Continuing Education and Training Programs in Five User Communities," DRI has started with the question, What is the readiness of these five communities with respect to adopting telecommunications technologies?

It is possible to select criteria for assessing the readiness of any community. Those used by DRI--current commitment to telecommunications, technical capacity and competence vis a vis telecommunications use, continuing education and training program availability, financial

resources (see Chart 1)--are not the only criteria that could be used. For example, one could use total expenditures on R&D as a measure of each community's commitment to innovation or the total expenditures on continuing education and training as evidence of the community's commitment to growth and current awareness so that its members will be prepared for the use of telecommunications. These latter criteria would require a more sophisticated analysis than is possible at this time.

Exhibit 2.1 presents DRI's subjective assessment of readiness among the five user communities at this point in time. Vocational rehabilitation and community colleges are the most ready to use satellite-based technology, libraries and Indian community colleges are of intermediate readiness and aging is least ready. Obviously, as part of any four-year plan, goals must be established for each user community. DRI's ability to establish meaningful goals for use of satellite-based technology is linked to the four criteria of readiness as applied in each community.

Major problems in defining user needs. Much has been written about the need for a coordinated, multi-agency federal effort in support of large-scale telecommunications projects attempting to aggregate a variety of public services and about the obstacles to achieving this coordination. Most recently, the Interagency Committee on Rural Communications has articulated the problem and the needs.* Their report

*Interagency Committee Report on Rural Telecommunications. Executive Office of the President/Office of Telecommunications Policy. December 1977.

Criteria	Vocational Rehabilitation	Aging	Indian Community Colleges	Community Colleges-Generally	Libraries
Current commitment to telecommunications	8	2	2	4	4
Technical capacity and competence vis a vis telecommunications use	2	2	2	4	4
Continuing education and training program availability	8	2	4	8	4
Financial resources	8	2	4	8	2
Totals	26	8	12	24	14

Scale
8 = High
4 = Moderate
2 = Low

EXHIBIT 2.1. POTENTIAL FOR APPROPRIATE TELECOMMUNICATIONS USE IN CONTINUING EDUCATION AND TRAINING

says that existing federal public service programs are presently unlikely sources of funding for large projects because of the difficulty in changing ongoing programs with their established provider, clientele and organizational expectations and commitments, and also because of a variety of legal and regulatory restrictions which increase the difficulty of coordination across programs. The report suggests that a more active federal role could include federal technical assistance for both needs assessment and hardware and software implementation, pooled funding from existing programs for telecommunications-based services delivery projects, and federally funded demonstration projects. The Interagency Committee looks toward a lead agency, such as is being formed within the Department of Commerce, as a possible mechanism for coordination.

From the perspective achieved during the intensive six-month planning period, the Denver Research Institute (DRI) project staff can itemize many additional, general problems. Several examples are given below:

- The literature suggests that a cost-effective satellite-based system requires a large number of sites (perhaps, as many as 200) and participants in order to spread the systemwide cost over many users, and that such a system must be operated intensively in terms of hours of use per day in order to reduce the per hour costs. DRI believes it is almost impossible to achieve these economies of scale during the initial period of attempting to aggregate inexperienced, unsophisticated users who come from a world in which risk-taking and pooling of money for continuing education and training is uncommon.

- Usually, a satellite-based system is more likely to be cost-effective if it serves widely dispersed areas. NRI would like to reach users in the five communities who are unserved or underserved, but this requires a capital investment which is difficult to obtain at the beginning stages of a project. Further, if users are asked to support capital costs that are large, the implication is that there will be a long-term commitment by federal government to parallel support for public sector satellite services, liaison and technical assistance organizations such as that proposed by TRT, etc. Almost none of NRI's prospective user communities have confidence that such a commitment exists.

- Experience shows that aggregation of like organizations having similar goals and objectives would be easiest to implement and more likely to succeed. The realities of life in the public service sector have led NRI to identify and want to serve diverse user communities. The result is an aggregation of users having multiple expectations and definitions of success.

- At this point in time, there is little evidence to suggest that NRI's user communities can use a satellite-based system on a self-supporting, operational basis if the system is to be used exclusively for delivery of continuing education and training, yet, the mandate of WIE prevents it from directly supporting the additional, extended uses which NRI anticipates will lead to a self-supporting, operational system.

In general, there are certain problems associated with:

1. The nature of the user communities being aggregated,
2. Changing technologies and associated costs,
3. The increasing role of the commercial satellite sector,
4. Changes and uncertainties within federal government, and
5. The mandate of WIE.

These problems must be confronted directly in order to provide a framework within which the continue, realistic nature of this plan can be reviewed appropriately. One project strategy is that a form of

provided federal funding be actually achieved; that is, where are responsible for fund-matching that accessible which was anticipated BIE funding. SRI believes that this is a very effective strategy because such federal funding is targeted for special groups and is available to these groups, but not to BIE. For example, service-oriented community colleges on Indian reservations are able to seek funds from the Bureau of Indian Affairs and from state higher education agencies.

A second strategy assigns certain operational tasks to the user communities, e.g., content development and packaging of the educational programs to be delivered. This is, in effect, accepting of a "turnkey" approach since the participants must eventually learn how to assume these operational tasks so that ongoing operational status will be achieved when BIE and BIE have withdrawn.

The strategies and procedures suggested by SRI in the proposed plan will lead to a fully-developed telecommunications capable of supporting large-scale and diverse uses of satellite-based delivery systems.

The sections below describe the user communities being aggregated by SRI and their needs. All of the educational topics and target groups proposed in SRI's original planning grant proposal are addressed. One additional special group, community colleges on Indian reservations, has been added. Some differences in emphasis and importance from the original proposal will be apparent. This occurs because of the different levels of readiness and sophistication found during the planning grant period.

Summary profiles for each of the five user communities are presented in Appendix A.

9. Vocational Rehabilitation Staff Training

The field of vocational rehabilitation, begun in 1920 with a budget of $750,000 has rapidly grown to include 80 areas 50 agencies with an annual budget of $535,000,000 to service 1.8 million citizens in 1970.* Such an increase in funding, as well as number of agency offices, personnel, and citizens served, depends on efficient and effective communication network between federal, state and local offices to keep staff, from administrators through line personnel, continually apprised of changes in federal guidelines which impact operating procedures. In such a dispersed delivery system as VR, it often becomes difficult to maintain communication with field staff so a system that ensures good information flow to and from the central office.

At the same time that the vocational rehabilitation system has been rapidly expanding, the ability to continually educate personnel has also been increasing in the federal bureau. In a time of rapid change and information explosion, continuing education can increasingly become the resource used to reorganize to adapt and upgrade the performance of their personnel.

Many Vocational Rehabilitation (VR) agencies are also faced with the challenge of keeping their staff apprised of changes in legislative

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*Budget of the U.S. Government, Fiscal Year 1970. Washington, D.C.: U.S. Office of Management and Budget, p. 155.

and innovations which may have an impact on the quality or nature of services to VR clients. The disciplines of rehabilitation medicine and bioengineering are only two examples of areas which are rapidly changing and expanding, from which vocational rehabilitation draws information to provide and improve services to individuals with disabilities that present a handicap to employment. New approaches in the delivery of information and training to line staff must be explored in order to meet this challenge.

Certification maintenance for vocational rehabilitation counselors. The discrepancy between continuing education needs of state VR agency personnel and the capability of rehabilitation trainers to meet this need has been heightened most recently by the introduction of certification maintenance into the professional development concept in the field of vocational rehabilitation. To meet the challenge of providing quality services to severely disabled individuals, the profession of vocational rehabilitation counseling has acknowledged the need for standards of competence and ongoing skill development for vocational rehabilitation counselors with the institution of certification for vocational rehabilitation counselors and a five-year certification maintenance plan. This process, taking effect in January 1978, requires that Rehabilitation Counselors must receive 150 contact hours of continuing education during a five-year period in order to maintain their certification as a VRC. Rehabilitation personnel will now be depending on trainers to provide a selection of training programs to aid them in maintaining professional certification. To meet this expectation, trainers must thus begin now to explore new approaches to the delivery of training, such as that afforded by satellite-based communications systems.

Current inability to meet many training needs. Regional Rehabilitation Continuing Education Programs (RRCEPs) were created and funded in 1974 by RSA in each of the ten federal regions to aid state vocational rehabilitation agencies in the fulfillment of the mandate to keep rehabilition personnel apprised of the most current methodologies in client service delivery. In a national survey of rehabilitation staff development activities, Means and Greenwood* report that RRCEPs are one of the most frequently utilized resources of training for agencies. For illustration purposes in this proposed plan, therefore, a RRCEP is used as a lead organization for training endeavors for state VR agency personnel.

Nationally, 80 state agencies provide services to handicapped individuals through a network of district and local offices in the 50 states, the District of Columbia, Puerto Rico, the Virgin Islands, Guam and the Trust Territory of the Pacific Islands. These 80 state agencies are staffed by over 50,000 personnel from administrative through clerical support levels. There are an estimated 20,000 counselors alone; in addition, many state agencies utilize specialists such as counselor aids or para-professionals to complement their counseling staff. **

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*B.L. Means and R. Greenwood. Participation by Vocational Rehabilitation Personnel in Rehabilitation Training. Research Report No. 956. University of Arkansas. Arkansas Rehabilitation Research and Training Center. October 1976, pp. 13-14.

**Annual Report to the President and the Congress on Federal Activities Related to the Administration of the Rehabilitation Act of 1973 as Amended. Fiscal Year 1976. Washington, D.C.: Department of Health, Education and Welfare, Office of the Secretary.

In comparison, the most recent listing of Rehabilitation Continuing Education Program personnel* shows less than 50 trainers staffing the 14 RRCEPs. At the regional level, using Region X (seven state VR agencies in Washington, Oregon, Idaho and Alaska) as an example, we find that three RCEP training personnel are responsible for the training needs of the over 1,000 individual staff members in the state VR system.**

Ideally, training should be able to remediate the unique performance deficits or enhance the performance levels of each potential trainee. The personnel of state VR agencies represent a challenge for trainers, not only due to their wide geographic dispersion, but also the range of formal preparation, experience, and individualized learning needs with which each may come to a training session. Thus, in such a dispersed and diverse potential trainee population as VR represents, the trainer has little hope of addressing the individual learning needs of all personnel. The limitations of insufficient trainer time and agency funding may often mean that state VR trainers (including RRCEP personnel and outside consultants) can only hope to partially provide adequate continuing education to the rehabilitation field. Limited funding and time means that training needs must be closely examined and only certain programs offered annually in order to serve the greatest number of trainees possible. Incorporating telecommunications technology into training delivery systems would heighten the trainer's

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* Listing compiled by Dr. C. David Roberts, Region VII RCEP, Columbia, Missouri, January 1978.

** State Vocational Agency Fact Sheet Booklet. Fiscal Year 1976. Washington, D.C.: Department of HEW/OHD/RSA, p. 46.

ability to reach a larger population of trainees in a more cost-effective manner. Such technology could be used to reach potential trainees who might otherwise be precluded from training, due to lack of training funds or inability to leave their offices for a several-day period.

Need for new approaches to address specific training problems; costliness of travel costs, use of consultants, and software in training. To meet personnel training needs, state VR agencies draw upon their own staff development personnel, trainers and consultants from Regional Rehabilitation Continuing Education Programs (RRCEPs), Rehabilitation Research and Training Centers (R&Ts), Rehabilitation Education Programs or private training resources, depending on the nature of the training need and resources available. In most training endeavors, rehabilitation personnel are brought together in a central geographic location, which can often be very costly and time-consuming both to the agency, trainees, trainers and consultants. Although consultants and outside resource people are often valuable to address trainees on a specific area in a given training program, fees and travel costs preclude their regular usage. Likewise, rental fees, shipping charges, and undue delays can inhibit the use of media in training programs on a regular basis, although a wide variety of software relevant to rehabilitation training currently exists. Substituting teleconferenced or televised broadcasts of presentations by consultants may offer a more cost-effective way to provide an opportunity to share their expertise with rehabilitation personnel.

Duplication of effort in the development of training materials. In response to the training needs of rehabilitation personnel, much time,

money, and effort has been expended by RRCEPs, R&Ts, and other training resources to develop training programs and software. Unfortunately, insufficient communication and cooperation has historically meant repeated duplication of effort and materials. Thus, a better communication network between training resources is needed to prevent further duplication of efforts in the development of training materials. Regularly scheduled teleconference meetings (several telephone lines are linked together by a connecting device), would not only help trainers to keep abreast of programs currently being developed, but could also provide a comparatively inexpensive forum for sharing expertise and information on topics of mutual concern which may have a direct impact on training.

Related work in progress and proposed. Section 2(5) of the Rehabilitation Act of 1973 (P.S. 93-112) acknowledges the need for continuing education, and encourages rehabilitation agencies to seek out and use innovative approaches in staff development and direct client service delivery. Recognizing the problems in delivering training to state VR agency personnel, the Rehabilitation Services Administration (RSA) has already funded several projects to study the use of telecommunications technology to aid in the delivery of training, as well as in the administration of agencies and in direct client services (i.e., Mitre Corporation, the Annenburg School of Communications at the University of Southern California, the Industrial Economics Division of the Denver Research Institute).

DRI is currently funded by RSA to study the feasibility of using telecommunications for delivering staff training to state VR agency staffs.

Training presently offered and training needed but not offered are being documented. Cost-effective technology-based delivery alternatives will be examined and one or more of these will be recommended for test and evaluation. In the course of completing this study, DRI staff are involved with VR personnel in 12 states and with a national Advisory Committee representing every aspect of VR education, practice, federal organization and professional associations.

Many of the problems in the delivery of continuing education to rehabilitation personnel have been faced by other deliverers of continuing education. Increasingly, VR and other disciplines have been looking to telecommunications technology as a means to deliver training to personnel with very diverse training needs, who are scattered throughout a wide geographic area. Satellite-based systems appear to be a very attractive option for delivery of continuing education to vocational rehabilitation staffs.

RSA continues to lead the way in exploring applications of technology. The recently announced national grant program for short-term training in VR listed telecommunications as a national priority. Dr. Susanne Bruyere of the Region X RCEP at Seattle University (the lead VR organization proposed by DRI in the present plan) has submitted a proposal to this grant program. Dr. Ruth Katz and DRI would be subcontractors to Seattle University if the project is funded. The proposal is concerned with using telecommunications to teach RCEP staffs, state VR training officers and others about the use of telecommunications technologies to deliver staff training. If the proposal is successful and is funded for a 12-month period beginning

in June 1978, a number of VR trainers will become knowledgeable about communications technologies including satellites and will begin to formulate regional plans for use of such technologies. This cadre of trainers will then be ready to fully participate in the gradual shift from total dependence on traditional delivery of continuing education to increasing use of the satellite-based systems.

Another proposal which would help to build an infrastructure that supports the present DRI has also been submitted by Dr. Bruyere. This is a plan for a total Region X telecommunications system which includes manpower development. Should this work be funded, Dr. Bruyere's efforts and those of DRI would again dovetail.

Finally, a Region X mechanism already in place would support the DRI plan. This is a consortium of all the VR training interests in Region X. Included are state training officers, staffs of RRCEPs, staffs of Research and Training Centers, etc. This group could easily designate an advisory committee to assist Dr. Bruyere and DRI in implementing the Region X portion of the delivery system.

One additional optimistic note: Senator Jennings Randolph, speaking in support of renewal of the Vocational Rehabilitation Act of 1973, mentioned several innovative uses of telecommunications which might be recommended for priority funding (Congressional Record, February 28, 1978). DRI believes that the Rehabilitation Services Administration will have a major interest in utilization of satellite-based delivery systems. Large amounts of money are already being spent by RSA for traditionally delivered staff training. Acceptance of a technology-based system should enable RSA to use

these funds to increase the scope and depth of training offered and the number of staff members reached.

The DRI plan calls for the VR user group activity to begin in Region X. Regions VI and VIII will be added next. Then nationwide service will follow. The rate at which this can be accomplished will be greatly facilitated as additional, related proposals are funded.

The logical next step after staff training is the natural adoption of telecommunications technologies for direct service from the staff to the VR community similarly isolated from community services.

A profile of this user community is included in Appendix A.

C. Training for Persons Working with the Aging

As of 1976, there were nearly 22 million people aged 65 and over--about 10 percent of this country's population. While the proportional growth of the elderly segment of the population has slowed, the total population growth will eventually result in a large increase in the number of elderly in the U.S.--as many as 30-31 million persons in the year 2000.

The need to plan for the elderly has become increasingly clear among federal agencies. For FY 1978, President Carter requested $423.45 million in funding under the Older Americans Act. Under the Administration on Aging, he requested $151 million for State and Community Programs, $25 million for Title IV including training, research and multidisciplinary centers, $225 million for the Title VII Nutrition Program and $20 million for the acquisition, alteration or renovation of facilities. Clearly, awareness and funding stimulate new programs, services and facilities. Personnel prepared to develop, implement, and operate these are a critical need.

The 1978 strategy for personnel training in gerontology-related fields involves two major approaches. One is the development of programs for young people just entering post-secondary education career paths; the other is for those already working with the elderly but who were trained prior to the time when specialization in gerontology was available. The latter group also includes the elderly themselves or other community-based persons who may or may not have previous college experience but who could now like to become involved--either as employees, volunteers, or informed citizens.

DRI has selected the Institute of Gerontology at the University of Denver to be the lead organization for the portion of satellite-delivered

training that relates to gerontology. The University of Denver established an Institute of Gerontology in July of 1977 after a number of years of effort on the part of faculty and staff. In 1976-77, an Administration on Aging (AoA) Planning Grant was awarded to the University for the development of a University-wide comprehensive program on aging. Following this, an AoA Career Training Grant of $110,632 was awarded in July 1977 for the implementation of an interdisciplinary program in gerontology for undergraduate and graduate students and for the provision of training opportunities for mid-career professionals in the field of aging. As a result of these efforts, a formal Institute of Gerontology was established as a separate administrative body within the University under the Office of Academic Affairs.

Operating as a coordinating body for University resources in this field of aging, the Institute has three main areas of concern: curriculum development, research, and community services. In the area of community services, the objective is to provide training opportunities for professionals and para-professionals engaged in working with older persons. This objective is to be accomplished through the development of short-term training programs and a multidisciplinary certificate program in aging studies for mid-career professionals. Both programs address the need within this community for the availability and accessibility of academically based training for those persons who work in this field.

The goals of the Institute reflect the intention of the University of Denver to:

- promote the scientific study of the processes of aging and their consequences for the individual and society, and to disseminate this knowledge;

- create opportunities for innovative, multidisciplinary programs in teaching, research, and community services in the field of aging;

- provide graduate and undergraduate career education and training in the helping professions related to aging;

- serve aging persons, directly through opportunities for them to participate actively in the life of the university, and indirectly through the provision of consultation and technical assistance to organizations and agencies representing consumers and providers of services for the aging.

It has become increasingly apparent that there exists, both within the Denver Metropolitan Area and the state, a need for a comprehensive training program in aging for practitioners in this field. The number of programs designed specifically for older persons is increasing and the number of older clientele served by multi-service centers, particularly mental health centers, is increasing rapidly. Because this growth of programming is less than ten years old, many of the personnel working in the field have not had specialized training in gerontology. It is generally recognized that short-term training is the most effective way to bridge the gap between the demand for services and the ability and feasibility of educational institutions to conduct appropriate career educational programs in gerontology. As evidence of this need for knowledge and training in aging, the Institute, in less than one year of operation, has received numerous requests to coordinate training for community agencies and programs.

Some examples of agencies requesting training assistance this year include: the Area Agency on Aging, Arvada Management Nursing

homes), Community Homemaker Services, Medical Care and Research Foundation, Loretto Heights College, and the State Department of Social Services. The type of request has varied; some agencies have requested coordination and implementation of training; some wish us to sponsor training jointly and others are exploring possible resources for future needs. The Institute has also initiated public forums and training sessions in such subject areas as: Adult Research on Intellectual Abilities, Career Opportunities in Gerontology, Minority Perspectives on Aging, Alcoholism and the Elderly, and "Curanderismo," a workshop on the history and methods of folk medicine within the Mexican-American culture. These have been well attended, and participants have expressed the need for more training in these subject areas as well as additional training by the Institute. While efforts to address training needs have been primarily directed towards the Denver community at this time, a number of inquiries have been received by the Institute as to the availability of training for service providers in other areas of the state, particularly in rural areas.

A formal proposal for the certificate program for mid-career professionals has been submitted to the Graduate Council and received approval. It is in the process of being presented to the Board of Trustees for final approval. Approximately 25 persons employed in the community have enrolled in a new course--Multidisciplinary Studies in Aging--coordinated by the Institute, which will be the core course in this program. It is anticipated that the interest of community persons will increase as this program becomes finalized within the next academic year.

Some of the unique features associated with the University of Hawaii's emerging programs are:

- No other college or university in the state is discussing providing a multidisciplinary emphasis or minors in aging, except in the liberal arts tradition, for regularly enrolled degree candidates.

- No other institution in the state is providing, nor is our knowledge considering providing, a comprehensive continuing education certificate program for persons already working with older persons who desire to upgrade their knowledge and skills beyond the level of an occasional short-term training offering but without being a regularly enrolled degree candidate.

- No other college or university in the state has, or is our knowledge is discussing having, an administrative home for a gerontology program which spans the academic units of the institution rather than being based within a single academic department or unit.

- No other college or university in the state offers such a broad range of professional educational opportunities related to aging (social work, theology, law, business administration, and professional psychology). There is a unique opportunity for aging-related training within a disciplinary and professional based context.

Related work in progress and/or proposed. The University received a Title IV-A Multidisciplinary Career Training Grant from the Administration on Aging in July 1978. The grant amount is $110,610 for one year and is renewable for a second year. The grant supports activities designed to meet five objectives. Two of these are related to the goals of the HEI plan.

1. To develop and implement a multidisciplinary gerontology certificate program for mid-career persons who are not degree candidates but who desire more than short-term training.

   Activities in this area include:

   - Expanding the short-term training offerings of the University to management level staff in public

[illegible]

- [illegible]

- [illegible]

- [illegible]

3. [illegible]

   [illegible]

- [illegible]

- [illegible]

- [illegible]

- Combining the knowledge of other similar programs with (1) the needs of the Denver metropolitan community as interpreted by the community persons on the advisory board and through community surveying, and (2) the resources of the University and its administrative circumstances, to design a format and content for such a program tailored to the University of Denver and the community it serves.

- Implementing the program, during the second year, at the DU campus.

- Providing limited financial support to enable persons who would otherwise be unable to participate to enroll in the certificate program through full or partial waiver of tuition.

- Exploring possibilities for cooperative arrangements with other schools or with service providers to allow the extension of the program to rural areas of the state with portions of the training and instruction offered at the rural locations and the remainder (e.g., summer or weekend sessions) on site at the University.

In addition to the provision of training for persons employed within the field of aging, the Institute is also engaged in a number of related activities. Most notable is the development of a community-services training center on aging, funded as a two-year demonstration project by the National Council on Aging. This project, recently funded, will provide for a campus-based service/training center in order to increase the number and quality of training opportunities in the area of gerontological services. It is one of six such projects funded in the country and will increase the Institute's capabilities in the area of training. Communications and exchanges among these projects would be greatly facilitated by a system of telecommunications.

CORONA Associates, mentioned above, is a group of retired and near-retirement age faculty and staff of the University who are establishing a retirement community which will include housing facilities near the campus. One of the primary purposes of the organization, which was formed about two years ago, is to develop mechanisms for retired faculty to remain in an active contributory role to the University; another is to provide avenues for continuing to enrich their own lives through utilization of the educational, cultural, and social resources the University provides. CORONA members have indicated interest in serving as volunteers in a variety of capacities for the Institute of Gerontology.

Other related activities include an Institute proposal to the National Institute of Aging, a proposal for a study of physical activity and the aging and the development of several new aging-related courses.

Dr. Ruth Katz, DRI Project Director, has produced a series of seven video programs in the general area of library services to the aging. These programs are designed for staff training and are in national distribution. Dr. Katz serves as co-chairperson of the Research Committee of the Institute of Gerontology and on the Research Utilization Committee of the Western Gerontological Society (WGS). She will be a speaker at a workshop on "Innovative Uses of Communications Technology in Aging" at the 1978 WGS annual meeting in April. The combined commitment of DRI and the Institute of Gerontology to training, extension services and technology will be of great importance in the development and implementation of operational plans.

DRI proposes to begin work on training delivery in gerontology in Colorado, then expand to the Rocky Mountain Region. A tie-in with the San Diego area is explained below. One audience for Institute-sponsored training is the University's own graduates. It is interesting to note that the University attracts students from 50 states, the District of Columbia, and ten foreign countries. Approximately 40 percent of the 7,600 students enrolled this year are in the various graduate schools. About two-thirds of the students are from the six states of Region VIII; about a third of these are from Colorado. Significant numbers of minority students, especially from the southwest and Rocky Mountain areas, are enrolled in both undergraduate and graduate programs. These include American Indians, Chicanos, Blacks, and Asian Americans. The first Doctor of Social Work (DSW) degree earned by an American Indian was awarded in 1974. The first DSW to a Chicana was awarded in 1975.

The Institute's renewal application for AoA training funds for 1978-79 will include plans for a Regional Resource Center on Aging. This center would collect materials and information about non-medical aspects of aging for use in curriculum development and packaging of training programs for dissemination by both innovative and traditional mechanisms.

While the evidence of the need for short-term training is apparent, the realities of a small staff within a small program meeting these demands are unrealistic. The University of Denver has the faculty and resources to implement quality training programs in a variety of subject areas; however, a more efficient and effective way

of delivering training must be developed, especially if rural populations of this state are to be adequately served. Considerations of such factors as travel costs, time away from other jobs responsibilities, the need for alternative and flexible hours for training such as on weekends and evenings are necessary.

Technology and aging. Only two technology-related points have been made above. One is the program on technology and aging that will take place during the 1978 annual meeting of the Western Gerontological Society and in which Dr. Katz will participate. The other is the soon-to-be submitted proposal for a resource center that would support continuing education and training programs delivered to off-campus sites.

Much of the activity relating technology and aging occurs in the San Diego area. San Diego has both a sizable senior population and the nation's largest cable television system. To link these two resources together, an organization called PACE was formed by the community Video Center; a Center on Aging, the Communications Program and the University Extension at the University of California at San Diego; and the Western Behavioral Sciences Institute. PACE is setting up production and viewing centers convenient to older adults in San Diego County. It will provide training in the use of television and will put seniors in touch with each other.

Given the organization and the activities already in place, DRI plans to tie in with San Diego for training activities.

A profile of this user community appears in Appendix A.

D. Indian Community Colleges

For this portion of its plan, DRI has designated the American Indian Higher Education Consortium (AIHEC) as its lead institution. The American Indian Higher Education Consortium was organized in 1972 as a means of strengthening the development of its member institutions and in furtherance of the concept of community based post-secondary education programs for American Indians and Alaskan Natives. The Consortium is a jointly sponsored effort on the part of its members to provide a direct mechanism for facilitating access to resources needed for their own institutional development. Based in Denver, Colorado, the AIHEC staff works to provide a variety of technical assistance services to a network of 15 Indian-controlled community college centers located on Indian reservations in seven states.

The Consortium's mission can best be described as developmental technical assistance through such functions as the provision of training, support services, resource identification, and advocacy in the areas of:

1. Accreditation
2. Financial Resources
3. Curriculum Development
4. Human Resources Development
5. Research

Since October 1973, AIHEC staff have worked to carry out these tasks while developing a base of information and expertise geared to the unique nature of the Consortium member colleges.

The main purpose of the Consortium is to provide an organizational structure through which the member institutions can help one another. Based on commonly accepted goals and mutual agreement on priorities for

achieving such goals, the AIHEC member institutions are jointly charting a course of action leading to the improvement of their individual colleges.

These institutions are two-year community colleges offering degree programs at the Associate of Arts level. They are in varying stages of development and their needs differ accordingly. However, they all have definite similarities: they are tribally chartered; their governing boards are comprised of Indian people; their student bodies are predominately Indian; they are in isolated locations; they actively reinforce unique tribal cultures while offering pragmatic curricula geared to contemporary life styles; and they are community service oriented.

The American Indian Higher Education Consortium, from its inception, has had the following objectives: (1) To promote, foster, encourage, and implement programs for the improvement of post-secondary and higher education for American Indians, Eskimos, and Alaskan Natives. (2) To promote methods and programs for the training of American Indians, Eskimos and Alaskan Natives for administrative, teaching, and staff positions in institutions of post-secondary and higher education. (3) To establish information centers for post-secondary and higher education institutions upon which those institutions might call for advice and information. (4) To facilitate and encourage the seeking of funds for implementing various of the corporation's programs from government or private sources. (5) To foster the development of any and all other programs, centers, plans, and ideas which have as their general goal the improvement of American Indian, Eskimo and Alaskan Native higher education.

Two of AIHEC's member colleges will be the initial participants in the DRI plan. These are Oglala Sioux Community College in Pine Ridge, South Dakota and Sinte Gleska Community College in Rosebud, South Dakota. Dowell Smith, Academic Vice President at Oglala Sioux and Lionel Bordeaux, President of Sinte Gleska will be the liaison persons with DRI. Both colleges have 300-400 students and are part of the South Dakota higher education system.

Both colleges are accredited through Black Hills State College in Spearfish, the University of South Dakota and South Dakota State University. They offer Associate of Arts Degrees (Agriculture, Business, Education, General Studies, Early Childhood Education, Home Living, Social Sciences, Lakota Studies) and an Associate of Applied Science in Psychiatric Technology. An Associate of Arts in nursing degree program is a satellite program of the University of South Dakota School of Nursing. Some of the programs are designed to be transfer programs--facilitating entry into bachelor's degree programs. Continuing education courses, reading and other special programs are also offered. Sinte Gleska has a special medicine man program, and is also interested in moving toward becoming a four-year institution.

Oglala Sioux Community College is intentionally decentralized so that courses are offered in each of the nine college centers (in Wanblee, Batesland, Martin, Manderson, Porcupine, Allen, Kyle, Pine Ridge, Oglala). This, plus the interrelationships with other South Dakota higher education units is good justification for telecommunications usage. Probably a transportable unit will be needed in the start-up period.

A special commitment of Indian colleges is to provide access to training for their own instructors. At any given time at any college, several instructors are on leave to obtain bachelor's degrees. If access to degree programs could be provided through use of satellite-based delivery, availability of credentialled Native American instructors would be increased.

Another interest of AIHEC and its member colleges is to focus on educational projects that are labor intensive and will lead to increased employment on the reservations. It appears that telecommunications can be viewed as appropriate technology in this context. Content development and communication of instructional programs will become a Native American project. Assistance is already available in the form of the Native American Public Broadcasting Consortium, Inc. (NAPBC) operating with funding from CPB.

NAPBC is an organization formed for the purpose of establishing a national videotape and film library of program materials by, for and about Native Americans. It is headquartered at the Nebraska ETV network center in Lincoln. The combined skills and interests of AIHEC, NAPBC, and DRI should provide an excellent framework for program and service development with AIHEC member colleges.

Related work in progress and/or proposed. Evidence of interest in satellite-based technology is already apparent. During April, NASA will provide satellite demonstrations at several reservations. AIHEC members will be involved on April 10 at the Crow Agency in Montana. The Crow Central Education Commission is the host organization, Mr. Leroy Clifford,

Executive Director of AIHEC, plans to convene a membership meeting immediately following the NASA demonstration. He and his board will look at alternatives and processes available and then be prepared to make decisions regarding the role of satellites in educational program delivery. Dr. Ruth Katz, DRI project director, has already visited the AIHEC member colleges in Pine Ridge and [illegible] in South Dakota and received expressions of interest from [illegible] sites. Mr. Clifford, in a March 13, 1978 telephone conversation with Dr. Katz, authorized her to reflect his genuine interest in exploring applications of the satellite-based technology.

In addition to operational support already received (by some member colleges) from the Bureau of Indian Affairs and from state higher education agencies, AIHEC member and AIHEC as a consortium may apply for special grant programs. Some of these programs are especially for Native Americans--vocational training for Adult Indians is an example of a special BIA program. In addition, the BIA has already expressed interest in the use of telecommunications to deliver educational services for and by Native Americans; application for special project funds in this area may be favorably received.

The most promising development for AIHEC members has been the interest of the U.S. Congress in expanding and clarifying the government's mandate to assist tribally chartered colleges through appropriate enabling legislation. This has resulted in the passage of S. 1215, the "Tribally Controlled Community College Assistance Act of 1977" during the first session of the 95th Congress. Introduction of companion bill H.R. 9158 has been completed but the bill is still pending.

To sum up the prospects at Indian community colleges, one has only to quote from an introductory statement by Edwin Fills The Pipe which appears in the 1977-78 Bulletin issued by the Oglala Sioux Community College:

> An education society, as such, does not exist in the traditional Oglala social structure, but an excellent opportunity exists here where modern needs can be successfully combined with traditional aspects of Lakota culture.

There is every reason to believe that the use of satellite-based technology by Indian community colleges will be mutually beneficial to their growth and increasing social roles.

A profile of this user community is presented in Appendix A.

B. Short Courses and Special Programs Such as can be Offered by Community Colleges

At the end of 1976, there were 1,233 two-year programs in the United States. This includes community and junior colleges, technical institutes and two-year branches of four-year colleges. Total enrollment was nearly 4,100,000. The two-year college sector is enrolling an increasing share of all post-secondary students, from 26 percent of all students enrolled in higher education in 1970 to an estimated 36 percent in 1976. Community education enrollment (non-credit activities) at these colleges totaled 3,260,000.*

During the past ten years, community colleges have emerged as one of this country's most important vehicles of educational experimentation and positive social change. A wide variety of innovations has been developed--particularly in the areas of curriculum and instruction. It may well be that the reason the community colleges have continued to grow while other post-secondary institutions are stabilizing in enrollment is this commitment to experimentation and innovation based around the student and his needs. For example, new student attendance styles are easily accommodated by this institution.

Eleven of the newer and most progressive community colleges in the country have joined together to form the Mid-Continent

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*American Association of Community and Junior Colleges, 1977, Community, Junior and Technical College Directory. Washington, D.C., 1977.

Leadership Consortium. These colleges are located in Oklahoma, Nebraska, Kansas, Wyoming, Illinois and Wisconsin. BIA has designated South Oklahoma City Junior College (SOCJC) to be the lead institution for the community college participants; SOCJC will also represent the consortium. The needs being addressed by SOCJC are typical of the range of needs present in both urban and rural communities. Oklahoma County, in which SOCJC is located is one of ten counties in the United States having more than 10,000 residents who are Native Americans. The needs of this urban group are quite different from needs of Native Americans living on reservations. SOCJC's efforts have been well recognized and the college has received support from all of the advocacy- and service-oriented groups in the Native American community.

Other populations being served by SOCJC include Blacks, Spanish-Americans and the elderly. Special, innovative programs exist to train providers of service to the elderly and to organize and operate a series of adult education centers in the Greater Oklahoma City Metropolitan Area. The latter program, known as OASIS, is operated jointly with the Oklahoma County libraries system and is dedicated to increasing continuing and adult education services to populations that are unserved or underserved. The centers are located in branch libraries, schools no longer used by the public school system and other community based sites.

The OSHA Program is one of several cooperative ventures between OSUIT and the library system.

Training employers and employees in areas of occupational safety and health is another OSUIT program. With funds from OSHA, the American Association of Community and Junior Colleges coordinated a large national training program in which OSUIT was one participant. Between November 1973 and July 1977, 2,300 employers and employees had completed safety and health short courses. Whenever possible (about 80 percent of the time) training was held on worksites, community facilities or union halls and at a variety of times convenient to employees--including evenings and weekends. Coordination with other colleges resulted in course scheduling at five other college sites in Oklahoma.

In meeting the needs of the community it serves, OSUIT makes extensive use of advisory committees to provide advice on program content, to recommend field experiences, to assist in locating prospective faculty and to recruit students. The college's career programs for business, industry and the health professions are continually updated with the help of these committees. The resulting relationships with local and state agencies and businesses are, of course, excellent. OSUIT also is a leader in the use of individually paced instruction, making extensive use of computer media and multiple learning centers.

The college uses a systems approach to instruction. In order for this system to function, learning packets are developed

by the faculty. The packets are used by the students as the foundation of their study since each packet contains the course objectives which tell the student what is expected of him. The course objectives are written in behavioral terms, and evaluation is criterion-referenced. The student moves from objective to objective, thus allowing him to learn at a pace he finds comfortable. In addition to the objectives, each learning packet may contain a list of resources, references appropriate, and audio-visual materials to be utilized in the course to form a complete study plan for the student.

Due to the fact that students have different learning styles, the use of multiple learning modes are an integral component of the college's system. Through the use of multiple learning modes, students have the option to enroll in courses which are either group-, individual-, or multiple-paced. In group-pacing, the instructor determines the pace at which all students in the course work to achieve the objectives of the course. The students move through the course as a unit by being assigned and taking tests at predetermined times and dates. Under individual-paced instruction, the student and the instructor jointly determine a pace progress should be made through the course. However, the student must complete the course within the maximum time allotment and respect the time periods designated for testing and laboratory work. In the multiple-paced classroom, the instructor provides group-pacing for students desiring that mode and still allow students in the

same class to work individually. Before each major unit, the student, with the professor, determines which learning mode is more appropriate for him. For example, participation in group lecture-discussion sessions might be desirable, while the activities and assessments might be done at an individual pace. The student must respect designated testing and laboratory times, and college policy on course completion time is in effect regardless of which instructional mode is selected.

The Learning Resources Center (LRC) is an integral component of the college's individualized instructional system. The LRC provides access to a variety of media in addition to the traditional print medium. Tapes, slides, videotapes, films, microfilm, microfiche, phonograph records, and the equipment necessary for using the electronic and audio-visual materials are housed in the LRC, and available for check-out. Students may use the materials in the LRC, in class, in individual study carrels, at their home, or at any place they find a suitable learning environment.

SOCJC has a fully equipped, color, video studio and is a regular user of the statewide talkback television system and its 27-site network. Programs received by satellite could thus be taped for redistribution throughout Oklahoma. SOCJC offers career programs in electronics and in radio-TV repair--students from these programs are available for equipment maintenance and repair.

Other participants. Two other members of the Mid-Continent Leadership Consortium will be initial participants in the DRI plan. These are Central Technical Community College in Hastings, Nebraska and Laramie County Community College in Cheyenne, Wyoming. Hastings is a community of about 24,000; the college district enrolls about 4,500 students at campuses with an additional 12,000 community education enrollments.

Cheyenne, Wyoming has a population of about 42,000; the college enrolls about 2,200 students. Another 2,700 enrollments are for community education programs.

Future prospects. The rate at which community colleges are growing and their ability to organize and implement programs to match community interests and needs suggests that this user community will rapidly adopt satellite-based delivery systems. The colleges which would initially participate in the DRI plan have already demonstrated uses of technology and a philosophy of assuming ongoing responsibility for programs that were started with federal funds. The attitudes and operational philosophies among the community colleges appear to be ideal for participation in a multi-year, technology-based project.

F. Continuing Education for Library Staffs

Librarians everywhere are concerned that the knowledge and skills gained during the year or years when they acquired the master's degree are not sufficient to enable them to give the best service to the public. Technological developments and the increasing complexity of social and political and economic life have made it essential that practicing librarians engage in "continuing education" (CE), so that libraries can respond to the changing needs of patrons. Throughout the history of this country, libraries have supported the efforts of Americans to educate themselves. Their ability to continue to do so effectively is dependent in large part upon the ability of librarians to engage in CE. *

> A major problem inhibiting the pursuit of continuing education is the lack of quality programs.
>
> In spite of the many examples of successful continuing education programs, the continuing education effort in the library and information science profession is characterized by fragmentation, lack of coordination, inequities of access and lack of a system for documenting efforts expended by practitioners in continuing education.
>
> In brief, the present situation can be summarized as follows:
>
> - Library/information/media personnel do not have equal opportunity to continue their education because of geographical barriers which could be overcome by new and innovative programs.
>
> - There is a need to provide quality control and information about existing programs and programs to be developed.

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*American Library Association. ALA and Continuing Education, Memo From the Executive Director. January 11, 1978. Chicago, ALA, 1978.

- There is a need to stimulate individuals to seek improvements, employing organizations to acknowledge these efforts, and the profession to recognize those individuals who continuously update their knowledge, skills, and concepts.*

Periodicals in the field of librarianship are full of commentary on CE. The National Commission on Libraries and Information Science has recognized CE as a top priority and commissioned a study which resulted in a project report called the Continuing Library and Information Science Education: Final Report to the National Commission on Libraries and Information Science (Washington, D.C.: Government Printing Office, May 1974). This report proposed a nationwide education facility which developed as the Continuing Library Education Network and Exchange (CLENE).

In the process of determining what needs are not being met or met poorly, the researchers identified the following priorities for all levels of staff: (1) updating, (2) management, (3) human relations, (4) automation and (5) nonprint media. Other needs assessment surveys carried out by state, regional and national library and information science groups have shown similar needs.

In addition to identifying subject content needs, many of the surveys have identified modes or formats which participants would like to have provided for continuing education purposes. In the NCLIS report, the highest rankings were for: short intensive courses with or without credit, institutes, and invited conferences.

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*Continuing Library Education Network and Exchange (CLENE). Development of a voluntary continuing education recognition system for library/information/media personnel. Summary Report. Washington, D.C., CLENE, 1977.

In spite of many efforts by a variety of persons and groups the CE movement in librarianship lacks a sense of direction. The Denver Research Institute believes that the American Library Association (ALA) should be the national focal point for library continuing education and staff development and has designated ALA as its lead institution for this user community.

The American Library Association, founded in 1876, is the oldest and largest national library association in the world. Its concern spans all types of libraries: state, public, school and academic libraries, special libraries serving persons in government, commerce and industry, the arts, the armed services, hospitals, prisons and other institutions. With a membership of libraries, librarians, library trustees, and other interested persons from every state and many countries of the world, the association is the chief spokesman for the people of the United States in their search for the highest quality of library and information services. The association maintains a close working relationship with more than 70 other library associations in the United States, Canada, and other countries, and it works closely with many other organizations concerned with education, research, cultural development, recreation, and public service.

On July 31, 1977, the association had 4,178 organization members and 30,828 personal members--a total of 35,006. However, even this large membership does not adequately represent the potential target audience. According to the Bureau of Labor Statistics, the total number of librarians employed in the U.S. is expected to total 141,000

by 1980 and 162,000 by 1985. In addition, BLS projects 1980 employment of 173,000 library attendants (i.e., nonprofessionals) with this number increasing to 212,000 by 1985.

In its aggressive effort to take the lead in library continuing education, ALA is moving to establish an ALA Office for Continuing Education. The new ALA office expects to develop an operating program which will be self-supporting and to obtain necessary outside funding necessary during the planning and development period. A Standing Committee on Library Education already exists within ALA--it will develop and recommend association policies related to the training and education of library personnel; encourage and coordinate divisional activities in library education; take part in appropriate activity outside the Association; and act as a general clearinghouse in library education. Dr. Annette Phinazee of North Carolina Central University chairs this committee.

Technology and libraries with respect to general awareness and use of telecommunications, are in a pre-introductory or introductory stage of development. Slowness in making innovative uses of telecommunications technologies is attributable, in part, to disagreements or multiple points of view about the role of the library in its community setting. For special libraries having mission-oriented and agency commitments and for school libraries, role conflict may not be a factor. That is, these libraries provide collections and services in accordance with the needs of the organizations within which they are located. Their user groups are more or less

fixed in size (e.g., the employees of an agency, the students and faculty of one school district) and their librarians may have dual professional loyalties (e.g., science and librarianship, education and librarianship).

Publicly supported libraries, including state libraries and some academic libraries, especially those at community and junior colleges, are reexamining their philosophies with respect to users served, services provided and sources of funds available. For libraries that eventually will assume responsibilities in adult education, linkage with other service agencies, information and referral services, advocacy, and community center operations, maximal exploitation of telecommunications options will be the means to new ends.

Rarely does the library literature discuss requirements for voice and video communications or relate new user-directed service concepts to increasing use of available telecommunications technologies. One exception is found in Kenney and Esteves* who talk about the data-carrying capacity of cable systems, delivery of educational programs, access to library resources from terminals located in other public agencies, and facsimile and microform transmission via satellite. Another is a concept paper from the now defunct Western Interstate Library Coordinating Organization (WILCO), which makes the point that ". . . library requirements for voice and video communications should

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*Brigitte L. Kenney and Roberto Esteves. Video and Cable Communications. Chicago, American Library Association, 1975. pp. 14-17.

be considered where these can be integrated with digital transmission facilities." Finally, Brown, in his recently published book about the uses of new media in public libraries, identifies five anticipated trends including "increased recognition of the fact that communications and information technologies are far from being fully exploited."* Brown reminds us that even present capabilities for linking together entire communities could encourage many entrepreneurial efforts related to electronic information services and that many of these services (e.g., computer-aided independent tutoring, community information) could be supplied through public libraries.

The Denver Research Institute anticipates that libraries will become major users of telecommunications and that, through use of telecommunications, library continuing education and staff development will become a large-scale, joint effort of the American Library Association, state and regional associations and state library agencies. The activities of the ALA, described above, are evidence in support of this assumption.

Related work in progress and/or proposed. On February 7, 1978, the American Library Association participated in a NASA-operated satellite demonstration which beamed the "ALA Teleconference on the New U.S. Copyright Law" from a studio in Maryland to 15 sites in the southern U.S. It is estimated that some 1,300 persons attended the teleconference. Videocassettes of this conference are being made available for sale or rental through the Public Television Library.

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*James W. Brown. New Media in Public Libraries. A Survey of Current Practices. Syracuse, New York, Jeffrey Norton, 1976. p. 202.

The American Library Association is a member of the Public Service Satellite Consortium (PSSC) and ALA's Executive Director serves on the PSSC Executive Board. Eileen Cooke, who directs ALA's Washington office has recently been elected President of the Joint Council on Educational Telecommunications. These activities plus those of DRI's project director, who is a librarian, ensure a strong initial base for ALA participation in a satellite-based project.

The ALA has already submitted a proposal to a major foundation to seek support for developmental efforts in CE. DRI has submitted a proposal (December 1977) to the USOE Library Research and Demonstration Grants Program to study the feasibility of establishing a clearinghouse for library continuing education and staff development software. This proposal assumes that libraries will become major users of telecommunications and that one primary use will be for continuing education. Also, the DRI project director has, since 1974, been responsible for the development and production of 23 video programs for in-service training of library staffs. Twenty-one of these programs are satellite-deliverable and all are in national distribution.

Another major participant in library continuing education is CLENE, the Continuing Library Education Network and Exchange which was formed in 1975 to:

- Communicate to library, information, and media personnel information about quality continuing education opportunities currently available throughout the country.

- Identify continuing educational needs for the profession and encourage the development of responsive continuing educational programs in a variety of forms with equal access to all.

- Expand awareness of the importance of continuing education as a means of responding to societal and technological change on the part of employers and all who are associated with the profession.

- Provide library, information, and media practitioners with a network for the exchange of continuing education ideas with each other, with educators, with practitioners in allied professions, with developers of new techniques, and with local, state, and federal officials.

- Develop, through multiprofessional approaches, innovative solutions to national problems related to the need for all publics to have access to quality information and library service.

- Create a partnership among national, regional, state, and local professional associations, schools of library, media, and information science, state and national libraries, library, information, and media personnel and their employers for coordinated, nationwide planning for continuing education.

The programs of CLENE as presently designed provide for: (1) the continual assessment of needs and problem definition; (2) information acquisition and exchange; (3) program and resource development; and (4) communications and delivery to increase the awareness level for continuing education in general and for specific programs--those developed by CLENE as well as those produced by other groups and individuals. These are the four basic programs which are necessary to produce a sound continuing education program.

CLENE has already completed two sponsored projects: (1) Project for Development of a Model Continuing Education Recognition System for Library, Information, and Media Personnel, including Provision for Non-traditional Studies and the Development of a Prototype for Home Study

Programs, and (2) an Institute to Train State Library Agency Personnel to Implement and/or Strengthen Statewide Systems of Continuing Education for Library, Information, and Media Personnel.

A third project has recently been funded; it is this new work that relates directly to DEI's operational plan. CLENE will be planning and carrying out a yearlong extended institute for state library agency personnel involved in continuing education. As stated in the letter of support from Dr. Elizabeth Stone, Executive Director of CLENE and Dean of the Catholic University Library School, this new project has multiple implications for the use of satellite-delivered educational programs and materials. The most obvious ones are that the state agencies will be able to train their own staffs and that these staffs will then be familiar enough with the process and the technology to effectively use the delivery system more widely. Dr. Stone's letter appears in Appendix B. The DEI Project Director serves on the CLENE Advisory Committee and thus, provides liaison with that organization.

A profile of this user community is presented in Appendix A.

C. Extended Possibilities

For each of the previously described user communities, a category called "extended possibilities" has been included on the profile sheets. These suggested educational, administrative and other activities when added to the continuing education and training activities that will be detailed in this plan, are the basis for optimism that satellite-based delivery systems will become feasible for public sector user communities.

Another basis for optimism is the increasing recognition of the public sector market by the commercial satellite companies. DEI's project director has, within the past month, attended meetings at which RCA and Western Union representatives made presentations about the availability and costs of earth stations, point-to-point and multipoint transmission of audio and video signals, etc. Public sector users having needs for either narrowband or broadband applications will be comfortable dealing with supplier representatives who can discuss costs, technical options and a variety of contractual arrangements. A great step forward has already been made with the formation of the Public Service Satellite Consortium (PSSC) of which DEI is a member. Its roles as a point of access to NASA experimental satellites, as a possible broker of commercial satellite time and as a technical and regulatory expert are of great assistance to member organizations. The prospect of having PSSC assume a similar, management role with respect to the non-CPB leased transponders that are part of the Public Television Satellite System is encouraging.

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5. Lead Institutions and Their Representatives

Exhibit 2.2 identifies the lead institutions that will represent each of the five user communities participating in the project.

EXHIBIT 2.2. LEAD INSTITUTIONS

USER COMMUNITY	LEAD INSTITUTION	REPRESENTATIVE
Vocational Rehabilitation	Region X Rehabilitation Continuing Education Program, Seattle University	Dr. Suzanne Bruyere, Research & Research Specialist
Aging	Institute of Gerontology University of Denver	Dr. Nancy Osick, Director
Indian	American Indian Higher Education Consortium	Mr. Lenny Oliver, Executive Director
Other Community Colleges	South Oklahoma City Junior College	Dr. Dale Oliver, President
Librarians	American Library Association	Mr. Robert Wedgeworth, Executive Director

Letters of support from members of the five user communities described in the RFI plan appear in Appendix B.

5. Conclusion

The proposed project represents an ideal opportunity to meet the growing needs for continuing education in close conjunction with the promise of satellite-based delivery. In the sections that follow, ERI's overall coverage for matching the needs with the technology is presented.

PART 3. ALTERNATIVE APPROACHES

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A. Introduction

The DRI plan for developing an operational, self-supporting system of continuing education and training in five user communities has been conceptualized and is described as a satellite-based delivery system. Each user group is large and its continuing education and training base is national in scope. DRI believes that this large-scale design with the stated intention that each user group will assume responsibility for incorporating the educational delivery system into its routine operations and/or into an appropriate professional association or consortium. The fact that the user communities represent geographically dispersed audiences and that fast-scan video is assumed to be a requirement lead to the conclusion that a satellite-based delivery system will rapidly become a cost-effective choice.

The only other stand-alone options available are microwave transmission and use of the mails to deliver videotapes/materials. These are not seen as appropriate for the project as described. However, the use of combinations such as satellites plus cable TV, satellites plus ITFS, and satellites plus MDS are very much a part of the DRI plan. With the eventual development of a satellite system for National Public Radio, the separate concept of satellite plus radio will no longer be necessary.

In the pages that follow, DRI presents brief descriptions of transmission means applicable to educational programming and services.

B. Technologies Available for Delivery of Educational Programs and Services

Introduction. Five user communities have been described in Part 2 of this plan; all of their needs to be addressed are in the general realm of continuing education, para-professional education, short courses or special, community-based programs. Because of the complexity of the user communities, the evolutionary nature of the plan, and the rapid change in technology available in terms of amounts and costs, specific technical requirements will vary from year to year. However, DRI recognizes that the parameters which are critical remain constant. These include the necessity to specify and map transmission end points, transmission direction and bandwidth. DRI also recognizes that there are several technologies (telephone, CATV, and fiberoptics) which utilize guided transmission, that guided transmission requires the use of other's right-of-ways, and that maintenance of a spread out transmission plant is usually more expensive than that of radio transmission plant. Advantages of guided transmission are privacy, reuse of frequencies of nearby like systems, and immunity to radio interference.

DRI is preparing a report for the National Science Foundation that provides synopses of each possible technology which might be selected for service delivery.* Advantages and disadvantages of each and cost estimates are indicated. Exhibit 3.1 summarizes the technologies. Literature

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*Anita S. West and Paul I. Bortz. Design Issues for Rural Service Experiments Incorporating Telecommunications Technology, Final Report, NSF Grant APR77-15665. Denver: Denver Research Institute, University of Denver, 1978 (in preparation).

EXHIBIT 3.1 SUMMARY OF TECHNOLOGIES[6]

TECHNOLOGY	BANDWIDTH AND DIRECTION						DISTRIBUTION	
	AUDIO & LOW RATE DATA		DATA-9.6 to 1300 KBPS		VIDEO & HI RATE DATA		MULTIPOINT	POINT TO POINT
	1 WAY	2 WAY	1 WAY	2 WAY	1 WAY	2 WAY		
MICROWAVE	X	X	X	X	X	X		X
MDS	X		X		X		X	
ITFS	X	X	X	X	X	X	X	X
SATELLITES - (Network) ***	X		X		X		X	
TRANSLATORS	X				X		X	X
CABLE TV	X		X		X		*	
TELEPHONE		X					**	
TV & RADIO BROADCAST	X				TV		X	
ANCILLARY SIGNALS	X						X	
FIBEROPTICS	X	X	X	X	X	X	*	
ADVANCED TELEPHONE ****		X		X		X	X	X

* = Wired for Multipoint
** = Advanced Telephone - 4 Wire Duplex
*** = Two-way capability will be available at 14/12 GHz and above.

****Coaxial Cable Telephone System

[6]West and Bortz, op. cit.

references from which the information presented was obtained are not included here but can be provided by DRI. One example from the DRI report is given below.

Instructional Television Fixed Service (ITFS). Instructional Television Fixed Service (ITFS) was established for the transmission of instructional material by school districts, public colleges and universities, and private institutions of learning. Microwave transmission is used to transmit the information to off-campus classrooms.

ITFS provides 28 TV channels in the 2500-2686 MHz frequency range for the transmission of educational, instructional, and cultural material via radio to specified fixed receiving sites such as schools and libraries. Transmission may be one-way or two-way TV, or TV in one power is limited to 10 watts which is quite adequate to cover a 30 mile radius when coupled into a 10-13 dbi omnidirectional gain antenna providing high directivity receiving antennas are utilized. Multichannel transmitters and repeaters are allowed for ITFS.

The service makes available an outreach instructional system to bring various campuses to a rural or urban community. Examples of users in rural areas are professional and para-professional personnel desiring to take advanced courses in remote areas; high school lectures utilizing master teacher resources to teach a multitude of students; farmers, miners, and business people desiring to obtain technical data upgrading or other instructional information. The ITFS services may be used to transmit new technological developments through the presentation of

seminars and special programs. Programs may be videotape recorded for presentation to students at a later time.

The advantages of ITFS are:

- Twenty-eight channels are available for wideband TV transmission. This minimizes potential radio frequency interference by proper frequency coordination.
- Two-way interactive video, or "downstream" video with audio talkback allows flexible classroom utilization.
- Receiving setups are relatively inexpensive.

The disadvantages are:

- The service is limited to communication by educational institutions.
- Transmitters and "classroom" studios are relatively expensive.

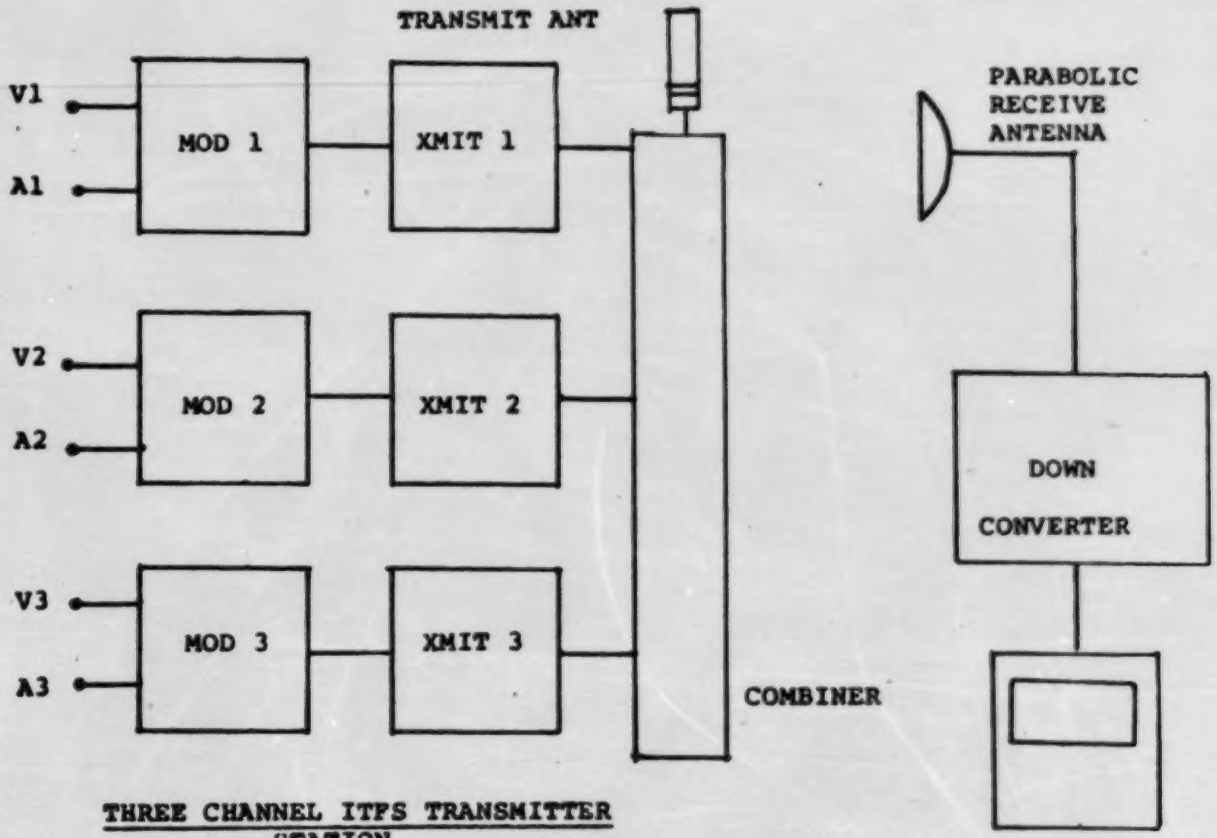
Technical information and cost data. Exhibits 3.2 through 3.4 show technical data and cost estimations.

Other possible technologies include point to point microwave communication, Multipoint Distribution Service (MDS), satellite networking, telephone systems, fiberoptic communications, advanced telephone, translators, and cable television. Exhibit 3.5 summarizes the advantages, disadvantages and costs of each technology.

EXHIBIT 3.2

ITFS FREQUENCY ASSIGNMENTS

Channel	Freq. Band
A1	2500-2506
A2	2512-2518
A3	2524-2530
A4	2536-2542
B1	2506-2512
B2	2518-2524
B3	2530-2536
B4	2542-2548
C1	2548-2554
C2	2560-2566
C3	2572-2578
C4	2584-2590
D1	2554-2560
D2	2566-2572
D3	2578-2584
D4	2590-2596
E1	2596-2602
E2	2608-2614
E3	2620-2626
E4	2632-2638
F1	2602-2608
F2	2614-2620
F3	2626-2632
F4	2638-2644
G1	2644-2650
G2	2656-2662
G3	2668-2674
G4	2680-2686



THREE CHANNEL ITFS TRANSMITTER STATION

EXHIBIT 3.3

RECEIVE STATION

TRANSMITTING EQUIPMENT	
SINGLE CHANNEL 10 WATT TRANSMITTER	$16200
DUAL CHANNEL 10 WATT TRANSMITTER	30780
THREE CHANNEL 10 WATT TRANSMITTER	44800
FOUR CHANNEL 10 WATT TRANSMITTER	58480
ANTENNA AND COAXIAL CABLE	3500
SINGLE CHANNEL 2 mW TALKBACK	6470
ENGINEERING & INSTALLATION	2500

RECEIVING EQUIPMENT	
DOWN-CONVERTERS QUANT 1-9	$575 EA.
10-24	500 EA.
25-49	435 EA.
PARABOLIC ANTENNA, MOUNT, & TRANSMISSION LINE	400
ENGINEERING & INSTALLATION	200

EXHIBIT 3.4 **COST ESTIMATES**

EXHIBIT 3.5

Technology	Advantages	Disadvantages	Costs
Point to Point Microwave	•Allows importation of information to rural communities for local distribution by another means. •May be used for one-way or two-way systems designed to meet the specific needs of the rural community. •Common carrier microwave, if available, is generally less expensive than operating a private system if low density use is contemplated.	•Capital investment for a private microwave system is quite high at this time. However, some technical breakthroughs in the future may reduce the investment necessary. •FCC licensing may be a long, complicated process because of the complex engineering and frequency coordination required for "line of sight" microwave.	Typical terminal capital investment R/O $32,000 T/O $34,000 Repeater $61,000 Common carrier interstate rate estimate $50-$70/month/mile
MDS	•MDS affords one-way community controlled information distribution to selected sites within the communities. •Receiving stations are relatively inexpensive.	•Regulation changes or waivers are required to use MDS in rural communities. •Capital cost outlays are quite high at the transmitter site. •Close coordination of adjacent communities desiring MDS will be required to prevent radio frequency interference.	Total transmitter cost (single channel) $20,000 Each receiver $1,140
Satellite Networking	•Distance insensitive--can transmit programming from any transmit station to many U.S. earth receive stations simultaneously. •Present satellite circuit capability is already equivalent to 150 TV channels with more to be added in the future. Most of this capacity is being used by common carriers for voice and data transmission and for CATV programs. There are now over 400 receiving stations at various locations in the U.S.	•Large capital investment for earth stations; and high satellite channel leasing expense. •FCC regulations prohibit "uplink" transmission using antennas less than about 30 feet in diameter at the present 6 GHz band. With the use of higher frequencies (still experimental), it will be possible to use smaller dishes for transmission allowing for economical two-way local transmission on satellites.	4 GHz single channel R/O earth station with 4.5 m antenna $17,000-$22,000 12 GHz single channel R/O earth station with 3 m antenna $15,000-$20,000
Telephone	•Advanced techniques allow for teleconferencing for highly efficient and effective delivery of educational courses. •Enables students to update their education in remote areas using instructors in their normal teaching environment. •Allows economical two-way teleconferencing via voice or terminals.	•For full duplex transmission, four-wire circuits are required. This requires extra telephone wires. •The bandwidth is limited to the voice frequency range of 4 KHz.	----

(Continued)

EXHIBIT 3.5 (Continued)

Technology	Advantages	Disadvantages	Costs
Fiber-optics	•Very wideband characteristics. •Negligible crosstalk or susceptibility to interference. •Shock proof. •Potentially very low cost. •Extremely low weight and volume. •Insensitive to changes in temperature, humidity, or pressure.	----	----
Advanced Telephone	•Integrated communications may be transmitted in both directions on a single coaxial cable. This includes the distribution of power for running the equipment.	•Present FCC rules and regulations do not allow telephone companies to own CATV companies serving the same area. •Too early to know just how economical advanced telephone systems will be.	----
Translators	•Can inexpensively transport and rebroadcast TV and radio stations utilizing unattended transmitters. New regulations allow commercial microwave importation adding flexibility to the service. •Very economical to use translators in sparsely populated rural areas.	•Local origination of programming is not allowed although several groups of citizens are encouraging regulation changes to make limited origination possible. •Financing is a problem. Since viewers cannot be limited, moneys are generally supplied by (1) taxation districts, (2) membership clubs and association dues, and (3) through donations. Recent recommendations have been proposed to set up "Rural Television Authorities."	Station with unidirectional receive antenna, translator and omnidirectional transmit antenna $25,000-$35,000 Repeater $11,000-$15,000
Cable TV	•Has a very wide bandwidth to accommodate 30 TV channels or wideband data. •The FCC allows signal importation and local origination. •CATV can provide upstream capability. •Subscribers are invoiced for services assuring cash flow.	•Very large capital investment is required. It is only cost-effective for relatively high household densities.	Cable costs $4,000/mile in rural areas, drops about $90 per household

6. Satellite Communications

Introduction. Satellites appear to be an ideal and economical mode for a two-way point to point communications since the operating costs are distance insensitive, the signal to noise (S/N) ratios are almost constant, and the transponders are basically transparent and flexible to transmit the ground signals. Today even since geostationary common carrier satellites give a number of RBOC experimental birds across North America with many more to join them in subsequent years. The total capacity is nearly 100 transponders, each with a 36 MHz bandwidth.

The domestic satellites (DOMSAT) provide very high reliability and very wide coverage with much potential capacity still untilized. The first U.S. commercial domestic satellites are WESTAR of Western Union, SATCOM of RCA, and COMSTAR of A.T.&T. and G.T.&E. A number of RBOC experimental birds, ATS and CTS series are to utilize utilizing medium power transponders for special experiments. Today's majority of satellite transponders have uplinks at 6 GHz with downlinks at 4 GHz. Other bands (still in experimental stages) are 14/12 GHz and 30/20 GHz. SATCOM and COMSTAR are designed for frequency reuse by utilizing cross polarized antennas so they can transmit a signal while receiving a signal polarized exactly 90° to the transmitted signal at the same frequency without interference. Specific characteristics are discussed later in this section.

Each SATCOM and COMSTAR satellite has 24 operating transponders, twice those of WESTAR, so twice the information may be transmitted and received over the allocated 500 MHz bands at 6 and 4 GHz. Of course, the orthogonal polarizations require much more complex circuitry on the satellites and in the earth stations to provide signal isolation.

The U.S. satellite communications, both fixed and commercial, have not exploited our most spectacular resource--and it remains only for us to determine priorities and goals of our society to implement the utilization of this new communications technology. As stated above, our large urban centers, business firms, TVRO, and U.S.Gov./U.S.Mil. recognized the tremendous commercial value of satellite transmission very quickly. These kinds have average capabilities of 1,200 voice equivalent channels or one TV channel per transponder in the C/G Ghz band for general usage. (Recently, Digital Communications of Norcross Ga) has announced they have developed a process that will "Compress" to transmit two video channels per transponder and double the transmission capability of transponders for TV.) (Recent additions to INTV operations' distribution has grown at a very rapid rate and, with the FCC decision to allow U.S cable television earth station antennas for receiving C Ghz, the proliferation of earth station terminals has been very large.

The DOD satellites being used for U.S. government experiments have been very successful in demonstrating satellite broadcasting feasibility techniques. For example, the DSCS-II launched in June 1971, has been used in the U.S. and abroad for experiments in the frequency ranges of 860 Mhz, 7.4 Ghz, and C/G Ghz areas. The DSCS, launched in December 1971, has capabilities for voice and video transmissions at C/G Ghz and 12/14 Ghz frequency ranges utilizing medium power transponders to provide high earth radiation levels, so antennas sizes may be kept

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[1] See "News," March 1978, p. 16.

reasonably small and still receive adequate signals. Experiments for the transmission of educational information in the Rocky Mountain states area and in India were successfully performed using the ATS-6; and the CTS bird is now being used for a series of experiments on the 12/14 GHz bands for transmitting TV and voice data. It has been used to connect a number of VA hospitals together very successfully for transmission of medical and administrative information, and is being utilized to test data transmission which will be used commercially by SBS.

In summary, the technology exists. A number of commercial and NASA satellites are being used commercially and for experimental transmission and offer tremendous potential for serving as a vehicle for quickly disseminating educational information. This could be particularly valuable for keeping professionals and para-professionals throughout the country up-to-date in their particular areas of specialty in a timely manner.

Specific satellites. Exhibit 3.6 shows the locations of the American and Canadian (North American) commercial carrier satellites. ATS-6 and the CTS are not shown and can be moved at will by NASA to different positions around the world.

Exhibit 3.7 is a table of present U.S. satellites showing their general characteristics.

The growth of satellites for both voice channel use and video transmission has been phenomenal. The cost of receive only (R/O) stations is considerably less than receive/transmit (R/T) stations since the FCC has allowed the use of 4.5 meter diameter antennas at 4 GHz. A large number of video receive terminals have been set up by CATV companies

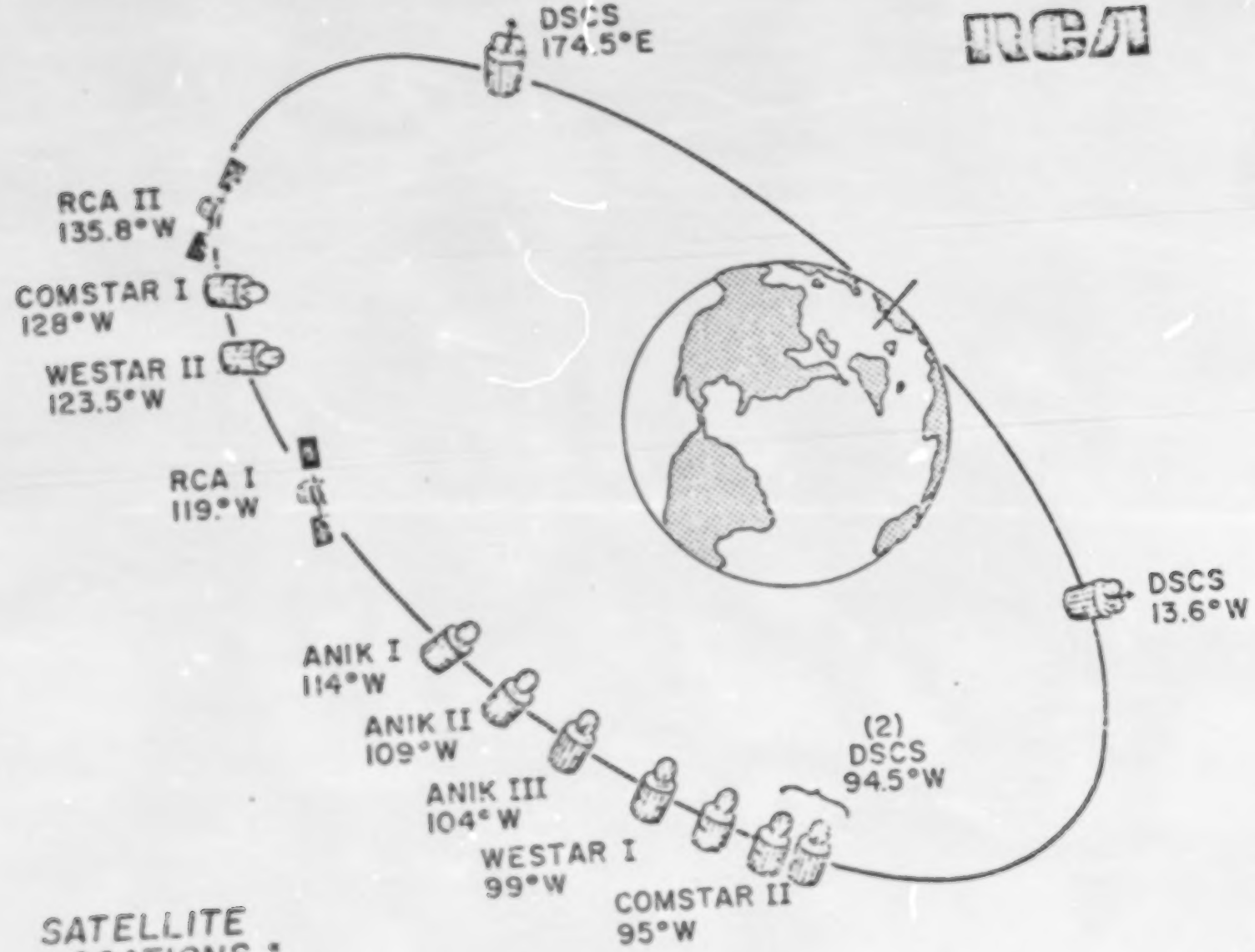

EXHIBIT 3.6

* Reference: RCA Satellite Communications - Presented by RCA American Communications, Inc., Government Services, March, 1978.

EXHIBIT 3.7

NORTH AMERICAN DOMESTIC AND NASA SATELLITE SYSTEMS

OWNER	DESIGNATION	YEAR OF SERVICE	COVERAGE	OPERATING FREQUENCIES	NUMBER OF TRANSPONDERS	CAPACITY TV	CAPACITY TELEPHONE (VEC)
Telesat	ANIK	1973	Canada	6/4 GHz	12	12	6000
Western Union	WESTAR	1974	USA	6/4 GHz	12	12	6000
RCA	SATCOM	1975	USA	6/4 GHz	24	24	12000
A.T.&T. G.T. &E.	COMSTAR	1976	USA	6/4 GHz	24	24	12000
SBS (IBM, et al)	SBS (Proposed)	1980	USA	14/12GHz	27	W.B. Digital	
NASA	ATS-6	1974	USA (movable limited coverage)	.860/2.6 GHz 6/4 GHz	Experimental Broadcasting	3	-
NASA	CTS*	1976	USA (movable limited coverage)	14/12GHz 6/4GHz	Broadcasting Experimental	1.	10

* 200 watt transponder at 12 GHz
20 watt transponder at 4 GHz

utilizing a common carrier satellite and transmitting stations for carrying special programming events, movies, and so forth to their subscribers.

Some of the current distribution of TV by domestic satellite as well as voice transmission examples are outlined below:

- RCA has two SATCOM satellites serving 16 heavy route message, teletype, and video stations. Over 100 small earth stations are being installed in Alaska for two-way telephone communications and receive only video use. RCA estimates that it will have 700 U.S. earth stations in place by 1980.

- Western Union has WESTAR I and WESTAR II operating and serves six heavy routes. It carries a number of private voice circuits for oil companies for off-shore rigs and CATV video.

- Amersat leases Western Union capacity to serve a number of oil company customers. The Wall Street Journal is sent via Amersat for local printing by facsimile.

- A.T.&T./G.T.&E. has some 28,800 voice channels available for consumer use on COMSTAR.

- Satellite Business Systems (SBS) is proposing an ambitious digital system utilizing small rooftop antennas to interconnect businesses and business branches.

- Public Broadcasting System (PBS) is setting up earth stations to interconnect their 165 TV stations together. Interconnection will be complete by fall 1978. Five uplink stations are also planned for the system.

- Home Box Office (HBO) is the first company to distribute TV programming events to CATV company front ends for cable distribution. HBO has over 131 areas signed up at this time.

- Channel 17, a private TV station, is leasing WESTAR space for distribution of WTCG-TV programming from Atlanta. A number of other entities are operating similar TV distribution centers via satellite including the Christian Broadcasting Network and the Satellite Network of New York.

- Very recent rule changes by the FCC have allowed common carrier importation of TV and FM signals for use by translators. Such importation includes the use of satellite distribution. It is not now known whether this will significantly change the use of translator broadcasting.

Although direct broadcast satellites are not allowed in the U.S., a number of countries are contemplating using these satellites to broadcast to their total population. One such satellite is scheduled to begin operation this year with an experimental system covering Japan. The satellite is called BSE (Medium-Scale Broadcasting Satellite for Experimental Purpose). The experimental satellite will be evaluated on the basis of: (1) economic coverage of a large, well defined geographical area with both mountainous and remote areas where terrestrial microwave systems are not economical; (2) high quality TV reception nationally; (3) individual home reception of a medium power satellite using low cost receivers; and (4) the ability to work around difficult environmental conditions. The number of channels planned is large enough to transmit special programming to special interest groups including professionals and para-professionals. The BSE uplinks will be at Ku band, 14 GHz, with downlinks at 12 GHz. The basis of the Japanese experiment was the ATS-6 data over the Rocky Mountain area and over India.

Earth stations. The proliferation in the number of earth stations is phenomenal. Because of this, there will be excellent opportunities for us to "piggyback" on specific commercial "receive only" stations for our one-way video educational demonstrations. Telephone communications may be used for the return link for questions, etc. Exhibit 3.8 shows the growth of Home Box Office earth stations.

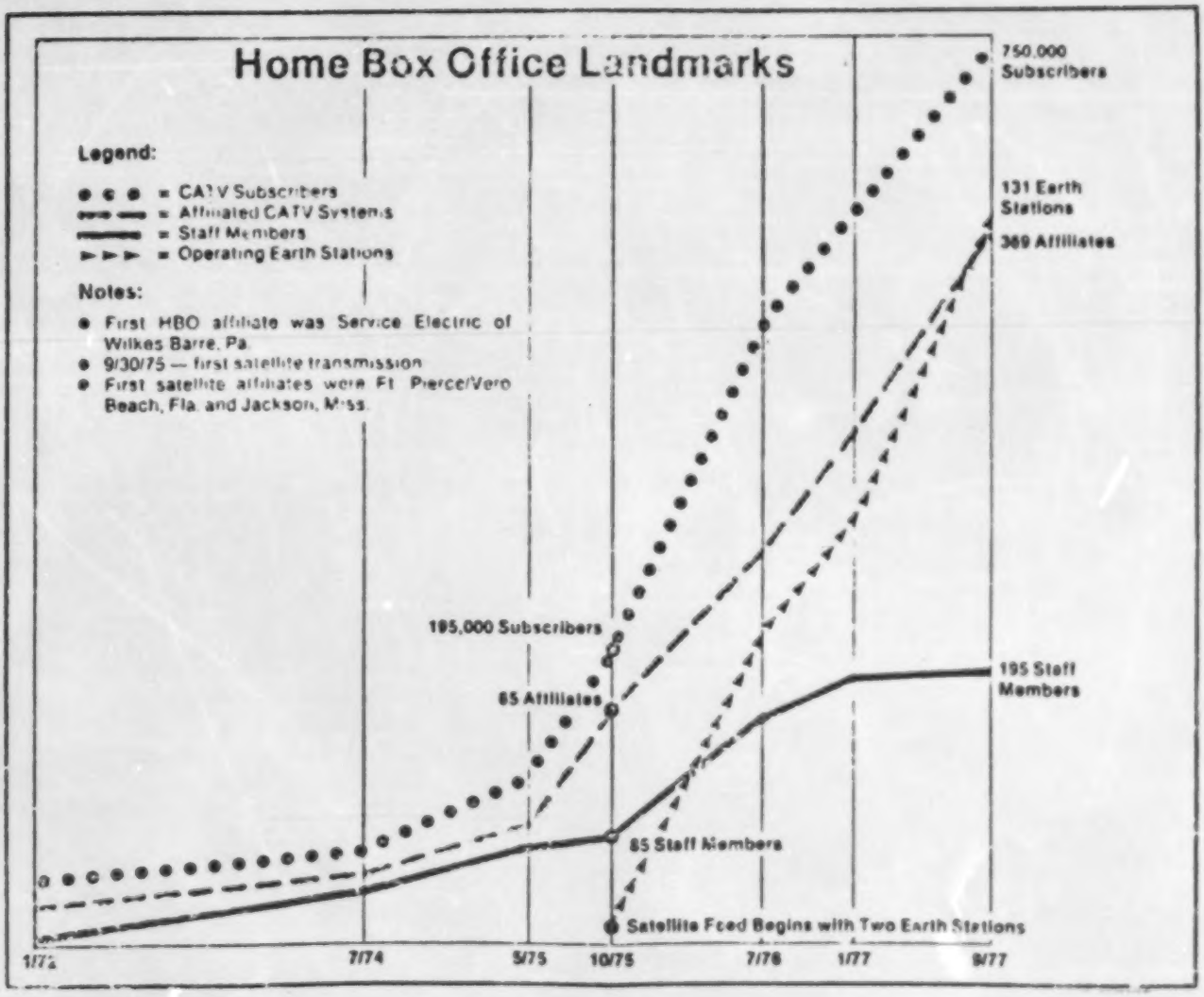

EXHIBIT 3.8*

* Reference: Satellite Communications, October, 1977, p. 51.

The present count of earth stations is somewhere between 400 and 500.* Assuming the growth of stations continues at its present rate doubling each year, we would anticipate having 1,000 stations by the end of 1978, 2,000 by the end of 1979, etc. It is not possible to estimate the saturation, but the needs--CATV, broadcasting network distribution, business information exchanges, etc., seem to support the possibility that our estimates are low and the accelerated growth will continue for some years. It is our intention to use the existing facilities where possible to demonstrate the feasibility of our specific NIE experiments.

Footprints. Unfortunately, not all of the satellite transmitter/antenna radiation patterns cover the entire U.S. The ATS-6 and CTS satellites cover only limited areas.

The coverage of radiated signal on the earth is called a footprint. Footprint energy is expressed in EIRP (Effective Isotropic Radiated Power) and the EIRP contours give system planners the received energy to be expected so they may design a receiving system with adequate S/N. A pictorial of the WESTAR satellite footprint for the PBS system is shown in Exhibit 3.9.

The footprint shown in Exhibit 3.9 does not give any quantitative data. It merely shows the useable coverage area using the planned PBS earth stations. Quantitative data are shown for the three main commercial satellites in Exhibits 3.10, 3.11 and 3.12, and the contours dictate the receive power densities to be expected at different geographical

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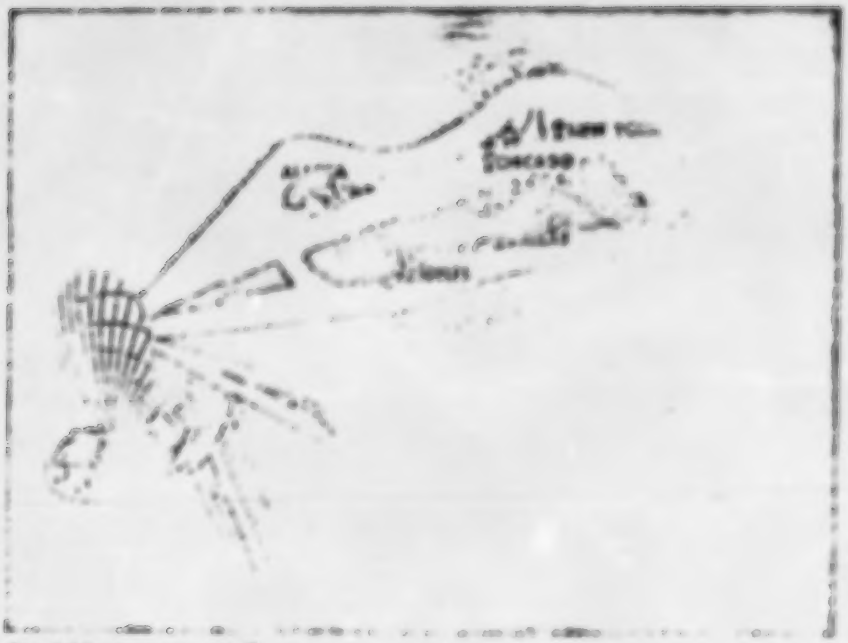
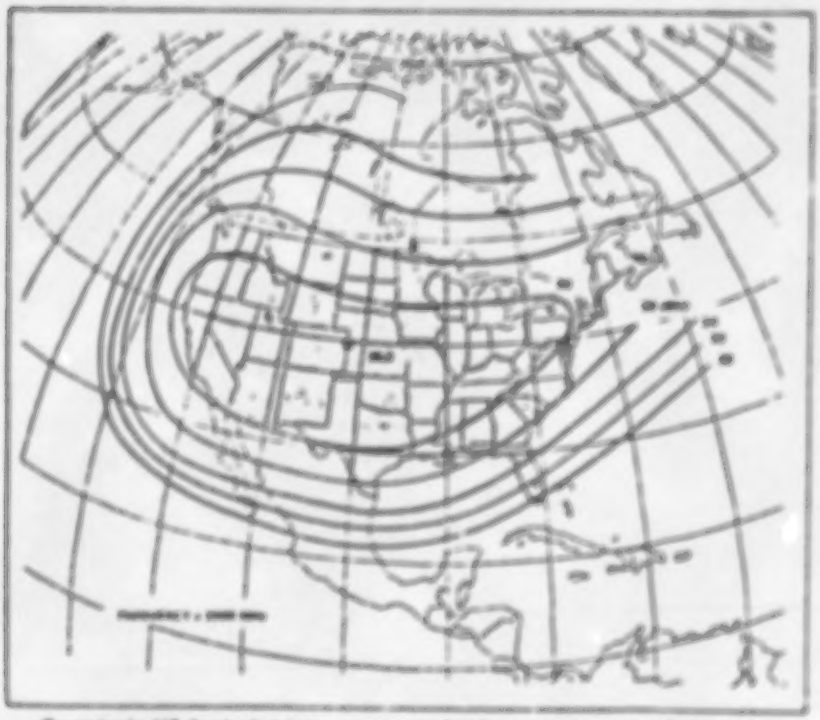
*Based on private communication with Mr. Paul Wells, OT/ITS, DoC, Boulder, Colorado.



The FBS "Footprint" *

EXHIBIT 3.9

* Reference: Satellite Communications, Feb., 1978, p. 33.



Comsat's US footprint has maximum EIRP in the central US. Areas near Miami are 4 dB down from maximum power.

EXHIBIT 3.10

* Reference: Microwaves, January, 1977, p. 37.

EXHIBIT 3.11*

EXHIBIT 3.12*

* Reference: Cable-Vision, October 11, 1976, p. 37.

areas in North America. As stated previously, an engineer may then design an earth station to receive TV and audio signal adequately.

The ATS-6 and CTS useable footprints are shown in Exhibits 3.13 and 3.14. Each contour represents a different position of the satellites so the transmitting and receiving earth stations must be located within any single contour. It is important to note a national experiment covering the entire U.S. would have to use one of the existing commercial satellites, while limited territory experiments may be used when coordinated with one of the NASA satellites. The NASA bird must be positioned so as to cover the area of interest.

Advantages and disadvantages in frequency selection of satellites. Since satellites being considered for the tests are engineered properly for attaining high S/N ratios at earth stations, we do not believe that the rain attenuation in the 12/14 GHz band will affect performance. Frequency coordination for transportable earth stations in the 4/6 GHz bands is considerably more complex than in the 12/14 GHz bands because of the high earth and terrestrial common carrier station densities. Frequency coordination must be performed if we should decide to set up our own receiving stations. We will consider the availability of existing stations and the economics. The small aperture antennas, particularly 10 foot diameter dishes used in the 12 GHz work, are considerably less expensive than the 4.5 meter dishes required to receive at 4 GHz.

With the proliferation of 4 GHz R/O systems, it may be most advantageous to "piggyback" on CATV or PBS receive systems where possible. If 12/14 GHz commercial satellites are available as they should be in

EXHIBIT 3.11*

* Reference: Received from Mr. Dell Ogden of PEDC in personal communication.

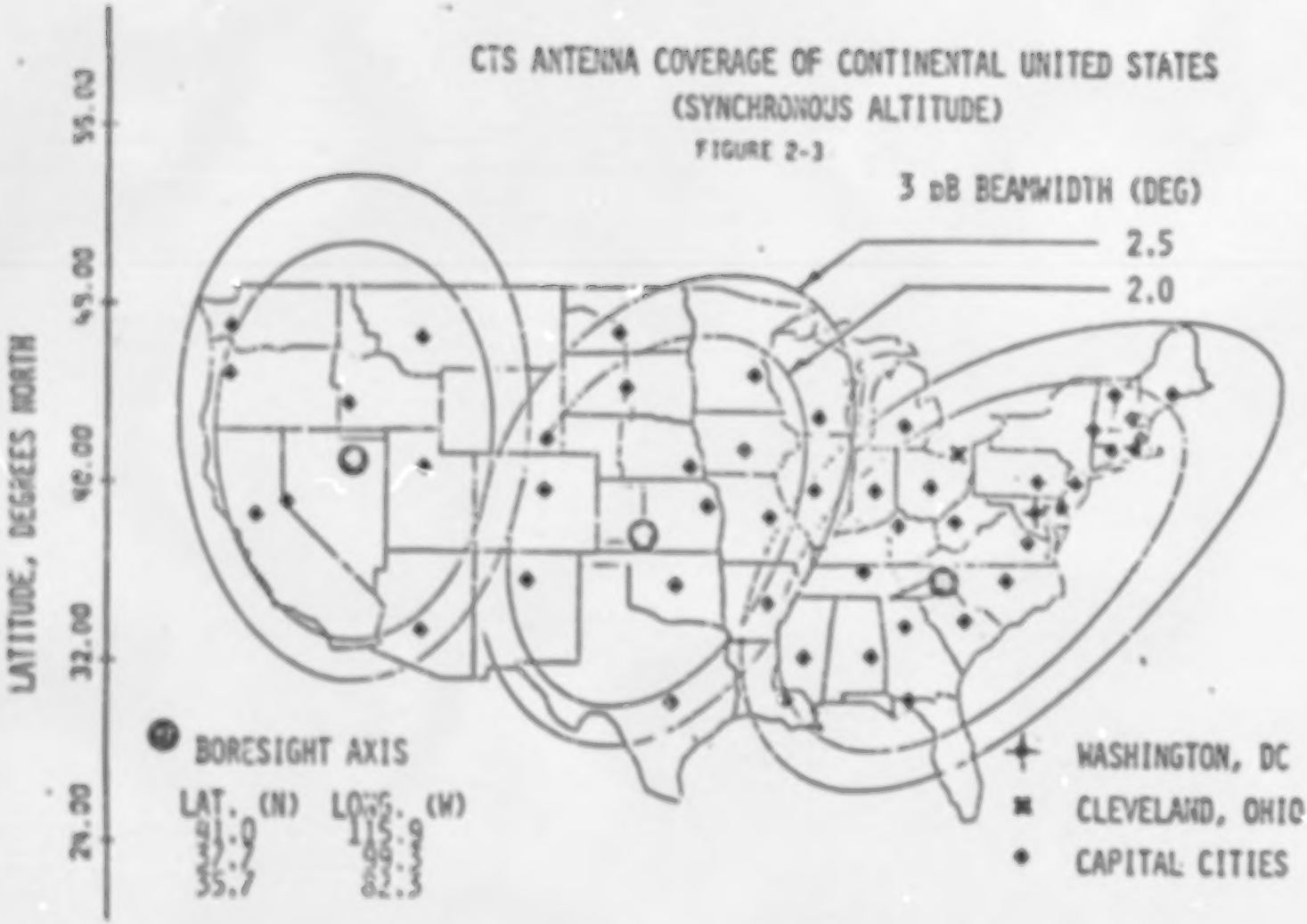


EXHIBIT 3.14*

* Reference: Received from Mr. Dail Ogden of PSSC in private communication.

1980, it is conceivable that there will be many T/R 12/14 GHz stations available to us in the later years of the demonstration.

Cost factors. Some cost factors have been provided by PSSC as a guide to us as shown in Exhibit 3.15. They may be used to forecast the transmission expenses during the tests (1978 dollars). Although the estimates were prepared for applications of PBS utilizing WESTAR, the RCA SATCOM costs are very competitive, and the figures appear to be very reasonable when compared to present transmission costs. These figures are used in cost estimates for DRI's operational plan.

Site selection. Where possible, sites will be selected near existing earth stations to minimize the cost of TV signal importation. Locations of earth stations are given elsewhere in Part 3 and in Part 4.

Legal/regulatory considerations. If time is purchased from common carriers such as RCA, Western Union, or A.T.&T./G.T.&E., no FCC filing is necessary. Where we plan to "piggyback" on commercial earth stations including CATV or PBS stations, it will be necessary to request FCC permission unless a test filing has already been made. We believe demonstrations for public interest will be most acceptable to the FCC based upon past experience. If a user community participant should choose to purchase its own facilities, it will have to make applicatio to the FCC for a construction permit and licensing. The procedure is complicated due to the required frequency coordination.

Where government facilities are used such as the ATS-6 or CTS ground stations, DRI or its technical subcontractor will have to obtain permission from the agency in charge.

EXHIBIT 3.15

PUBLIC TELEVISION SATELLITE SYSTEM (PTSS) SHARED USE STUDY*

HYPOTHETICAL MODEL
FOR END-TO-END SERVICE
USING WESTERN UNION FACILITIES
IN CONJUNCTION WITH
PUBLIC TELEVISION STATION FACILITIES

1. Studio (includes full crew, director, 3 camers, VTR)	
Color studio production/rehearsal	$225 per hour
Color studio setup	$100 per hour
Black & White studio production/rehearsal	$150 per hour
Black & White studio setup	$ 75 per hour
2. Studio to Uplink	
AT&T Land Lines	$.75 per mile, per hr
- connections (times 2 connections)	$ 90 per connection
- local channel ($1,000 maximum per month)	$500 per day
3. Transmission (based on occasional use)	
Prime time	$450 per hour
Daytime	$200 per hour
Earlybird	$180 per 2 hr min.
4. Receive (based on occasional use)	
Prime time	$ 90 per hour
Daytime	$ 40 per hour
Earlybird	$ 50 per 2 hr min.
5. Receive Site to Conference Site	
PTS open air transmission	$250-350 per hour
Cable or ITFS	$35-100 per hour
AT&T Land Lines	$.75 per mile, per hr
- connections (times 2 connections	$90 per connection
- local channel ($1,000 maximum per month)	$500 per day
6. Conference Site	
Equipment:	
- TV monitor	$20-30 per day
- VTR (cassette)	$15-25 per day
Meeting Room	$100-150 per day
Taping	$150 per hour
Dubbing VTR (does not include tape stock)	
- Quad to Quad	$150 per program hr.
- Quad to IVC or IVC to Quad	$100 per program hr.
- IVC to IVC	$ 70 per program hr.

*Reference: PSSC estimate, March 1978.

Syncom IV and related possibilities. The Hughes spacecraft Syncom IV that may or may not be given a free launch by NASA on a space shuttle orbital flight test appears to be a slight possibility for general public sector access. However, NASA is looking at the requirements of the public sector and has the encouragement of other federal agencies to do so. NASA has recently sent common carriers a "Request for Information" asking how they would deal with particular public service requirements.* The DRI project director was consulted in the development of this material. It seems clear that a federal/commercial sector/public sector joint effort is in the best interests of all concerned.

*Memo from PSSC, March 15, 1978.

D. Potential Shared Use of the Public Television Satellite System (PTSS)*

In June of 1976 the Corporation for Public Broadcasting and Western Union signed a contract that will provide WESTAR satellite services to the Public Broadcasting Service, National Public Radio, and the participating public broadcasting stations. The public television satellite system (PTSS), which will be fully operational by 1979, will interconnect public television stations by satellite and replace the present terrestrial interconnection consisting of land lines and microwave equipment. The public radio satellite system is tentatively scheduled for completion in 1980.

This expanded system has generated interest from the public service community regarding shared use of the WESTAR satellites, the PTSS facilities, and other associated ground equipment. This nationwide system will provide non-broadcast capacity for public service organizations.

The leadership of public broadcasting has agreed to study the prospect of making the satellite and related ground system available for appropriate shared use by other American public service interests. CPB recently commissioned the Public Service Satellite Consortium to examine the utility and practicality of sharing this telecommunications resource. This study will examine prospective uses and users, likely technical and cost elements, and suggested procedures for effecting user access to an economical end-to-end service.

The public television satellite system is composed of four distinct parts:

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*Information supplied by PSSC to attendees at working group meeting on shared use of the Public Television Satellite System, held in Washington, D.C., March 14, 1978.

1. WESTAR satellites (four CPB-leased transponders).

2. A main origination earth terminal near Washington, D.C.

3. Initially four (later more) regional transmit-receive terminals within the continental United States.

4. One hundred forty-eight receive only ground terminals located at public television stations.

This satellite interconnection will also provide real time transmission to Hawaii, Alaska, Puerto Rico, and the Virgin Islands--areas presently receiving programming on a delayed basis.

In addition, Western Union transmit and receive facilities which are not an integral part of the public television satellite system will further expand distribution possibilities for non-broadcast purposes.

The purpose of the PSSC study on shared use of the PTSS is:

- to identify user requirements and outline suggestions for shared use of the PTSS;
- to identify likely public service user groups;
- to analyze requirements for user access; and
- to establish guidelines and procedures for prospective uses and users.

Results from this study will be of immediate interest to DRI in its five communities project.

Some assumptions unique to shared use of the WESTAR satellites, PTSS facilities, and associated ground equipment include:

1. There is an identified need for shared use.

2. There are viable, identifiable user organizations with interest in shared use.

3. There are resources to support shared use.

4. An agency will be identified to manage the system.

5. The FCC will allow public service organizations to use the public television facilities for sharing purposes.

6. There will be access to both the public television facilities and Western Union facilities.

7. A preferred tariff will be approved for public service use comparable to that on WESTAR CPB-leased transponders.

Exhibit 3.15 shows estimated costs for use of Western Union facilities in conjunction with public television station facilities.

Exhibit 3.16 shows holders of public television station licenses.

Exhibit 3.17 lists all PBS WESTAR earth stations.

EXHIBIT 3.16

PUBLIC TE... LICENSEES

		Number of Licensees	Number of Stations
1.	LOCAL SCHOOL Licensed to a local school board, district, or authority.	18	18
2.	COMMUNITY License held by independent foundation or corporation free from government or institutional financial affiliation.	61	75
3.	STATE SYSTEM License held by state authority, agency, board, or commission or multiple-station state system licensed through another state-wide entity.	23	105
4.	UNIVERSITY License held by institutions of higher education (university, college, junior/community college), except when operated as a state network.	53	76
	Total	155	274

[2/78]

EXHIBIT 3.17

PBS WESTAR EARTH STATIONS

Receive Earth Stations

ALABAMA	
Birmingham	WBIQ
ALASKA	
Anchorage	KAKM
Bethel	KYUK
Fairbanks	KUAC
ARIZONA	
Tempe	KAET
Tucson	KUAT
ARKANSAS	
Conway	KETS
CALIFORNIA	
Eureka	KEET
Fresno	KMFT
Huntington Beach	KOCE
Los Angeles	KLCS
Los Angeles	KCET
Redding	KIXE
Sacramento	KVIE
San Bernadino	KVCR
San Diego	KPBS
San Francisco	KQED
San Jose	KTEH
San Mateo	KCSM
COLORADO	
Denver	KRMA
Denver	RMPBN
Pueblo	KTSC
CONNECTICUT	
Hartford	WEDH
DISTRICT OF COLUMBIA	
Washington	WETA
FLORIDA	
Gainesville	WUFT
Jacksonville	WJCT
Miami	WPBT
Miami	WLRN
Orlando	WMFE
Pensacola	WSRE
Tallahassee	WFSU
Tampa	WUSF
Tampa	WEDU
GEORGIA	
Athens	WGTV
Atlanta	GATN
Atlanta	WETV
HAWAII	
Honolulu	KHET
IDAHO	
Boise	KAID
Moscow	KUID
Pocatello	KBGL
ILLINOIS	
Carbondale	WSIU
Chicago	WTTW
Peoria	WTVP
Urbana	WILL
INDIANA	
Bloomington	WTIU
Evansville	WNIN
Indianapolis	WFYI
Muncie	WIPB
South Bend	WNIT
St. John	WCAE
Vincennes	WVUT
IOWA	
Des Moines	KDIN
KANSAS	
Topeka	KTWU
Wichita	KPTS
KENTUCKY	
Lexington	WKLE
Louisville	WKPC
LOUISANA	
Baton Rouge	WLPB
New Orleans	WYES
MAINE	
Lewiston	WCBB
Orono	WMEB
MARYLAND	
Owings Mills	WMPB

Receive Earth Stations cont.

MASSACHUSETTS	
Boston	WGBH
Springfield	WGBY
MICHIGAN	
Allendale	WGVC
Detroit	WTVS
East Lansing	WKAR
Marquette	WNMU
Mount Pleasant	WCMU
University Center	WUCM
MINNESOTA	
Appleton	KWCM
Austin	KAVT
Duluth	WDSE
St. Paul	KTCA
MISSISSIPPI	
Jackson	WMAA
MISSOURI	
Kansas City	KCPT[1]
Sedalia	NCAL[1]
Springfield	KOZK
St. Louis	KETC
NEBRASKA	
Lincoln	KUON
Lincoln	NBTN
NEVADA	
Las Vegas	KLVX
NEW HAMPSHIRE	
Durham	WENH
NEW JERSEY	
Trenton	WNJT
NEW MEXICO	
Albuquerque	KNME
Las Cruces	KRWG
Portales	KENW
NEW YORK	
Binghamton	WSKG
Buffalo	WNED
Garden City	WLIW
New York	WNYE
New York	WNYC
New York	WNET
Plattsburgh	WCFE
Rochester	WXXI
Schenectady	WMHT
Syracuse	WCNY
Watertown	WNPE
NORTH CAROLINA	
Chapel Hill	WUNC
Charlotte	WTVI
NORTH DAKOTA	
Fargo	KFME
OHIO	
Athens	WOUB
Bowling Green	WBGU
Cincinnati	WCET
Cleveland	WVIZ
Columbus	WOSU
Dayton	WPTD
Kent	WNEO
Toledo	WGTE
OKLAHOMA	
Oklahoma City	KETA
OREGON	
Medford	KSYS
Portland	KOAP
PENNSYLVANIA	
Bethlehem	WLVT
Erie	WQLN
Hershey	WITF
Hershey	PPTN
Philadelphia	WHYY
Pittsburgh	WQED
Scranton	WVIA
University Park	WPSX
PUERTO RICO	
San Juan	WIPR
RHODE ISLAND	
Providence	WSBE
SOUTH CAROLINA	
Beaufort	WJWJ
Columbia	WRLK[1]
Conway	NCAL[1]
Greenwood	NCAL[1]
Rock Hill	WNSC[1]
Spartanburg	NCAL[1]
Sumter	WRJA

[1] No Call Letters

PBS WESTAR Earth Stations cont.

Receive Earth Stations cont.

SOUTH DAKOTA	
Brookings	KESD
Vermillion	SDTH
Vermillion	KUSD
TENNESSEE	
Chattanooga	WTCI
Knoxville	WSJK
Memphis	WKNO
Nashville	WDCN
TEXAS	
Austin	KLRN
College Station	KAMU
Corpus Christi	KEDT
Dallas	KERA
El Paso	KCOS
Houston	KUHT
Killeen	KNCT
Lubbock	KTXT
UTAH	
Provo	KBYU
Salt Lake City	KUED
VERMONT	
Winooski	WETK
VIRGIN ISLANDS	
St. Thomas	WTJX
VIRGINIA	
Annandale	WNVT
Harrisonburg	WVPT
Norfolk	WHRO
Richmond	WCVE
Roanoke	WBRA
WASHINGTON	
Lakewood Center	KCTS
Pullman	KWSU
Seattle	KCTS
Spokane	KSPS
Tacoma	KTPS
Yakima	KYVE
WEST VIRGINIA	
Beckley	WCHP
Huntington	WMUL
Morgantown	WVPB
WISCONSIN	
Madison	WITH
Madison	WHA
Milwaukee	WMVS

Main Origination Terminal

Springfield VA

Receive-Transmit Earth Stations

Denver, CO	KWSU
Hartford, CT	WEDH
Tallahassee, FL	WFSU
Lincoln, NB	NDTN
Columbia, SC	WNLE

Note: West Coast will also have a regional transmit-receive earth station.

8. Miscellaneous Additional Equipment/Technologies

DNI recognizes the potential uses of supporting technologies and has collected considerable amounts of the available information about them. Parallels transmission systems, time division multiplexers, DCS systems, CBX packet-switched networking, electronic mail systems, transmitters/receivers for sending handwritten messages over telephone lines, and telephone bridging systems for teleconferences are all of potential interest to the five user communities participating in the DNI plan. However, it is not possible to predict at which points in time during the four-year period or for which users these technologies may be appropriately introduced. Therefore, detailed discussion of supporting technologies is not included at this time.

f. Institutional Implications

Even after decisions are made regarding the appropriate satellite technology or mix of technologies for cost-effective delivery of needed services, a number of additional institutional and administrative issues need to be resolved. Some of these are discussed briefly:

1. Issues related to instructional materials. It is not always possible or desirable to transfer existing training modules from one delivery medium and environment to another without substantial curriculum modification. Numerous questions arise regarding the (re)organization of materials/information in order (a) to take advantage of the special capabilities of the chosen medium and (b) to accommodate to the limitations. These questions will be explored by the project's Program Committee generally and with the advisory groups working within each user community. During the project's first year, the cost-effectiveness of modifying existing program content for satellite-based delivery will be tested.

2. Issues related to the delivery of instruction. There are various administrative and logistical problems to be considered in bringing audience/hardware and software together effectively in the training environment. These issues involve attention to such matters as the storage and maintenance of equipment and support materials and to the environment in which they will be used: room size, power, lighting, and ventilation requirements, scheduling, etc. The Technical Committee for the project, the technical subcontractor and the user communities will all be involved in solving human factors problems.

3. Issues related to instructional range. In order to anticipate that the satellite-based training medium will be used effectively, it is

also necessary to plan for ongoing support such as the training of staff personnel, and the development of aids to systematic use such as study guides, auxiliary materials, tests, etc., and their appropriate accessibility. This coordination will be lined by the lead institutions and created by KBI staff to work with the delivery system, the programs and the resource materials provided.

F. Issues related to evaluation. Finally, it is necessary to provide for the collection of information related to the assessment of the programs. This includes establishing mechanisms for collecting student evaluative data (or accreditation data), exit data, measures of institutional, community and user acceptance, and reactions from other affected groups or individuals. Phase one (what aspects of evaluation will be the responsibility of an external evaluator to be hired early in the project's first year. KBI staff and project committees will develop the evaluation RFP, advertise it, and review bids submitted.

Basic statements about the instructional technologies to be tested and used during the four-year period covered by the operational plan are as yet possible bits like. However, as greater emphasis is being placed upon automating, individualizing, and computerizing instruction, KBI has become increasingly involved in documenting the expanding technology, in analyzing the potential of alternative hardware and software configurations, and in exploring delivery alternatives. Various analysis, cost analysis, and existing approaches have been employed in various studies to provide information on the usefulness and flexibility of new instructional methods. Recent studies have sought to identify technologies and variables influencing

the application and effectiveness of computers, multimedia programs, microforms, and other instructional aids in the training process. During the course of these studies a prototype, interactive computer-managed instructional system (CMI) and a computer-based troubleshooting simulator for electronics instruction were developed. Other studies have examined organizational factors in the management of large educational projects and have identified structural alternatives for delivery.

In the area of new media, educational applications for various microform concepts have been investigated and have resulted in the development of concepts for educational microform which extend the medium beyond its familiar role as a "substitute" for hardcopy. The role that microform can play in providing low cost, individualized, and effective instructional materials has been demonstrated in this work. Multimedia programs for in-service training of library staffs and for librarians to use with community groups have been developed and nationally distributed and nontraditional methods of delivery of educational programs using telecommunications are being explored for a variety of professional and paraprofessional target groups with special needs; for example, in isolated and rural areas.

DRI believes that its instructional technology group which includes electrical engineers, educators, media specialists, mathematicians and computer specialists will be able to work effectively within all five communities to ensure that the match between instructional design possibilities and available technologies is the most effective and most appropriate possible.

PART 4. OPERATIONAL PLAN

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A. Introduction

For those of us who have been involved with the development and use of satellite delivery systems in the public sector, it is difficult to again restate the many practical, economic, technical and regulatory problems that have interfered with large-scale development and maximum acceptance and use. Many satellite "believers" think that the combination of recent FCC rulings which encourage competition in domestic communications and which have stimulated investments by private industry and the corresponding rapid changes in technology, some of which will result in dramatic cost reductions, contribute to an optimistic outlook for public sector participants.

Organization and aggregation remain the critical key words. As explained by Bransford and Potter:

> The critical aggregation process requires an initial protected environment, with funding and administrative arrangements attuned to the unique institutional conditions of public service agencies and organizations. Past experience has demonstrated that the market processes of the commercial marketplace are relatively ineffective in transferring to the public service the benefits which are implied in the advances of communication technology.
>
> Operation of experimental satellites will provide public service users during the crucial early phases of the aggregation process with a controlled atmosphere in which to explore the benefits of sharing responsibility for planning and implementing appropriate telecommunication services.*

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*Louis A. Bransford and James G. Potter. Developing the Market for Public Service Communications: A Lesson in Aggregation, presented at Society for Applied Learning Technology Conference, Orlando, Florida. February 13-15, 1978, p. 3.

Experimental satellites are, of course, not the complete answer. Enough capacity is needed on a continuing basis so that users in the beginning stages or those in the transitional period that precedes operational status can be assured of consistent service. Developments in the commercial sector are encouraging as is NASA's continuing attention to the possibility of a satellite dedicated to public sector use.

Bransford and Potter and others have advised potential public sector organizers to allow sufficient time (possibly as much as five years) for development, to provide low-budget entry points, to establish a reasonable set of milestones and to provide for liaison between and among participants, government agencies and commercial common carriers. A strong institutional base is seen as urgently needed as is entrepreneurial initiative to establish a broad base of support.*

Some reviewers of an early attempt at developing a self-supporting network for operational use of interactive television in medical education concluded that network management autonomous from the program delivering institutions and not preoccupied with the technology might have been helpful; that cost distinctions between program development, administration and telecommunications must be made, and that planning requires adequate money and time.**

Commenting on ways to accelerate market development, Bransford and Potter suggest aggregating a cross-section of public sector users

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*Bransford and Potter. Ibid., p. 5.

**Practical Concepts, Inc. Practical Concepts for Using Interactive Television, Applications in the Medical Community. Washington, D.C., May 1975. Prepared for Lister Hill National Center for Biomedical Communications.

and selecting a service mix that exercises the strengths of a communications satellite. Wise use of bandwidth is also advised. Seven important market issues have been identified:

1. A public service telecommunications market will not occur automatically--it will require nurture.

2. The private sector will be reluctant to invest in telecommunications technology without evidence of a "critical mass" of public service users to recapture the initial investment.

3. Economies of scale can, with sufficient lead time, foster the aggregation of public service user requirements and resources.

4. Regulatory policies that encourage expanded use of telecommunications in public service will need to be updated or created.

5. Further examination of existing and projected telecommunications capability, availability, and associated costs will be crucial.

6. There must be evidence that facilities, equipment and capability will be available to ensure ongoing continuity of service.

7. A concerted effort will be required to acquire, produce and catalog programs amenable to telecommunications.*

The DRI plan described in this part reflects strategies which attack the basic issues. First, DRI plans to use existing experimental satellites, especially CTS, only for test and demonstration and user involvement purposes during the first year. Commercial systems--especially RCA and Western Union and the Public Television Satellite System (CPB-WESTAR)--will be used beginning in the second operational year (or sooner). Continuous attention will be given to following the development

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*Bransford and Potter. Ibid., p. 9.

of SBS and other commerical carriers, to the possible availability of SYNCOM IV and to any other federal/industry public sector efforts.

Second, DRI suggests a management plan in which it assumes a primarily organizing/management/technical liaison role for five nationally distributed user communities. Experiments with satellite delivery systems have already proven the technology. It is the gradual aggregation and involvement of users and the development of suitable program content that is the greatest challenge. This effort requires specific commitments of time, personnel and money.

The DRI strategy is to maintain contact with user groups on an organizational level (such as professional associations and consortiums) and on an individual local-site level (a community college, library). By looking on a micro and macro level, DRI believes it will be able to better design a long-range program suited to the needs of the users. DRI will also continue to seek support from state, regional and national organizational units to strengthen the plan and increase the likelihood of success. Because of DRI's interests in library continuing education, vocational rehabilitation, instructional technology, and telecommunications, it is logical that the Institute pursue the possibility of becoming a management center and utilization coordinator for telecommunications-oriented continuing education programs.

Third, DRI perceives the development of program content and course materials as a primary responsibility of the user groups. Each of the five user communities participating in the DRI plan is at a different stage of readiness with respect to program availability, so

each will differ in the point in time at which full program development capacity will be reached.

Fourth, DRI achieves the effect of accumulating pooled federal funds by expecting each user community to seek funds through the normal channels available to it. Only in this way will there be evidence that the user communities are committed to organizing for cost-effective delivery of continuing education and training programs on a large scale and that these communities will be able to continue the educational programs and services and to eventually pay for them without NIE funding support.

Fifth, DRI recognizes that extended use of the satellite-based delivery system by subsets of the five user communities for programs and services in addition to those educational objectives suitable for NIE support will lead to a much increased likelihood of achieving self-supporting, operational status.

B. Statement on Continuing Education/Training Software and Materials

It has been stated several times throughout this plan that the five user communities vary in their degree of readiness to use technology-based delivery systems for continuing education and training. Two of the user communities are, however, well organized generally with respect to availability of continuing education and training programs. These are the vocational rehabilitation and the community colleges user groups. Even among these communities, much of the programming is delivered traditionally. The other three user communities--aging, Indian community colleges and libraries--are not yet well organized for continuing education and training but recognize the need to develop and organize.

Given the above-described "state of the art" in the various communities, three simultaneous approaches are possible and are part of the DRI plan. First, user communities must begin to modify and/or convert some existing continuing education and training programs so that they are suitable for the technology-based delivery systems used. Some of the modifications may be easily accomplished while others may require re-formatting, repackaging and total revision of content. In many cases, where already developed curricula/programs have been created with federal funds, the additional cost of conversion may be a reasonable expense. This idea will be tested by the Region X Rehabilitation Continuing Education Program and by South Oklahoma City Junior College during the first year of the project.

Second, the user communities must learn to access available video/curriculum resource collections such as the Native American

Public Broadcast Consortium, the Great Plains National Instructional Television Library, the Public Television Library and the University of Mid-America. As is well-known, programs from these collections can be previewed remotely and delivered according to schedule for real time transmission or later replay. A recommendation to this effect has been made to the Corporation for Public Broadcasting in a study commissioned by the University of Mid-America. The SRI plan includes use of these resource collections.

Additional continuing education software/materials clearinghouses are also needed. The vocational rehabilitation community has already studied this need and expressed interest in developing such a clearinghouse. One traditional clearinghouse exists for VR materials; another general, information center has been funded and will be established at the Catholic University of America. SRI has submitted a proposal to the U.S. Office of Education Library Research and Demonstration Grants Program to look at the feasibility of establishing a library continuing education software clearinghouse. These clearinghouses are needed and would greatly facilitate the rate at which the user communities become self-supporting in their use of satellite-based delivery systems.

Third, the user communities must begin to learn more about developing new programs for technology-based delivery to adults in non-degree programs. Very little research has been performed in this area.

SRI recognizes that some legal problems must be solved if programs produced by public or private organizations are to be copied,

co-recommended a clearinghouse effort. In July 1977, the Ford Foundation and the Copyright Office at the Library of Congress co-sponsored a workshop on off-air taping for educational uses. The published report of this conference is not yet available but NEC has the summary papers prepared by the five working groups. Although solutions to problems are not yet formulated, it is evident that a procedure or procedures for licensing and distribution of programs can be developed to the satisfaction of both users and producers.

C. [illegible] on Professional Association Involvement

For each of the five [illegible] professional association involvement will be a critical factor in achieving operational, self-supporting status. Most of the professional associations have offices in Washington, D.C. and many have lobbyists who represent their interests with respect to legislation and appropriations. All have conventions and other means of getting information to members and to the media.

Again, the success of association participation on the beginning of the four-year plan varies by community. For illustration, the largest national professional association will center on the "land [illegible]."

AIHEC can be seen as the major organization for Indian [illegible] community colleges although there are other, larger groups such as the National Indian Education Association which should also become involved. For community colleges, the BIE plan first involves a leading traditional college, then a consortium of community colleges in the mid-section of the United States. It is part of BIE's plan to work with the American Association of Community and Junior Colleges (especially with the Vice President, Dr. Richard Wilson) with the idea that AACJC will assume responsibility for the established continuing education system and establish it as a national program priority.

Vocational rehabilitation continuing education programs are already well-established but there is no professional group specifically for VR workers. Staffs of the regional continuing education programs do, however, meet annually. BIE's plan is to begin immediately to

[illegible] the Council of State Administrators of Vocational Rehabilitation (CSAVR) and the National Rehabilitation Association (NRA) in the appropriate plan. These two organizations are already knowledgeable about the ongoing RRI project concerning staff training and interdisciplinary delivery of programs. In gerontology, the RRI approach will be to involve the American Gerontological Society (AGS) first. AGS is a small, scholar-oriented society already committed to gerontology. A program on technology and aging (at which the RRI project director will speak) will be offered at the Society's annual meeting in April 1978. The next most appropriate organization is the Association for Gerontology in Higher Education. The director and staff of the University of Denver's Institute of Gerontology are already active in this organization and will provide liaison with it.

D. Statement on Public Sector/Commercial Sector Interface

DRI has already made informational contacts with RCA American Communications, Western Union and Satellite Business Systems. Ongoing relationships with the common carriers will be coordinated by the Public Service Satellite Consortium acting as technical subcontractor to DRI. Additional contacts with the private sector will be maintained by James W. Hart, PE, technical consultant to DRI.

The DRI plan recognizes the importance of involving the five-year user communities in partnership with the commercial sector in order to ensure an ongoing relationship and availability of services to match needs. This will be accomplished through user participation in the technical committee, through information dissemination to users and through DRI/PSSC contacts with the common carriers.

E. First Project Year

Approach. The first year of the project will be concerned with staffing, start-up and familiarization at prototype sites, implementation of the organization/coordination plan by DRI and participating user groups, and finalization of plans for maintenance and evaluation. It is expected that software development will be initiated and that some original software will be available for dissemination via satellite on an experimental basis by the end of the first year. The only satellite transmission of programs will be on a short-term experimental basis to a limited number of sites. Although it is important to "exercise" the delivery system during the first project year, it is even more important to develop a workable distribution plan that will maximize user-developed programming and ensure open channels of communication between and among different user groups and DRI. Therefore, much of the work to be accomplished in year one is described in Part 5--Management Plan.

Narrative. User community participation in satellite-delivered programming is summarized in Exhibit 4.1. This narrative describes the activities planned for each user community.

In the vocational rehabilitation community, DRI will be working with its designated lead institution, the Region X Rehabilitation Continuing Education Program (RRCEP) at Seattle University. The RRCEP will produce and transmit via satellite one complete training course. Throughout this operational plan, one CE course or special program is defined as either 6 or 12 contact hours of instruction (not

EXHIBIT 4.1. FIRST YEAR SATELLITE DEMONSTRATION PROJECTS

	User Communities				
	Vocational Rehabilitation	Aging	Indian Community Colleges	Other Community Colleges	Libraries
Lead Institution	Region X - Rehab. CE Program, Seattle University	University of Denver Institute of Gerontology	American Indian Higher Ed. Consortium	South Oklahoma City Jr. College	American Library Association
Available Uplinks to be Used	Seattle (Fairbanks)	Denver	Denver	Denver or Oklahoma City with a transportable earth stations	Seattle
Satellite Used	CTS	Only involve as observers during first year	CTS	CTS or commercial carrier	CTS
Minimum Services	Transmit one complete training program to VR staff (12 hrs.)		Transmit materials from the Native American Public Broadcast Consortium Library and program from AIHEC in Denver, demos to occur over 5-day period	Transmit one course for providers of home-health care to the aging (12 hrs.)	Transmit one training program (12 hrs.)
Audience					
A. Where	Region X: Alaska, Idaho, Washington, Oregon		Pine Ridge, S.D., Rosebud, S.D., and Denver	Hastings, Neb., Cheyenne, Wyo., Oklahoma City, Denver	Region X: Alaska, Idaho, Washington, Oregon
B. Who	VR state agency staffs		Native Americans at community colleges, instructors	Persons working with the aging	Librarians and library staffs

EXHIBIT 4.1. FIRST YEAR SATELLITE DEMONSTRATION PROJECTS (continued)

	User Communities				
	Vocational Rehabilitation	Aging	Indian Community Colleges	Other Community Colleges	Libraries
Audience (cont.) C. Downlinks	VA hospital sites--at least 4 to be selected		Need one transportable receive/transmit station to be used at 4 South Dakota sites	Need transportable receive only station for Hastings, Neb., and uplink for Okahoma City	VA hospital sites--at least 4 to be selected
Primary Technology Mix	1. One-way satellite delivery of video 2. Two-way audio 3. Mailing of auxiliary material		1. Satellite delivery--one-way video 2. Two-way audio 3. Mail auxiliary materials	1. Satellite delivery--one-way video 2. Two-way audio 3. Mail auxiliary material	1. Satellite delivery--one-way video 2. Two-way audio 3. Mail auxiliary material

all of which may be satellite transmitted) and one associate of arts degree course is defined as 45 contact hours of instruction (not all of which may be satellite transmitted).

The course delivered by the Seattle RRCEP is expected to involve 12 hours of instruction and will be transmitted to a subset of the 1,000 VR state agency personnel working in Region X. Instructional programming will be transmitted to the CTS from the Seattle uplink, using the University of Washington's uplink facility. Given, the already tightly scheduled studio time at the University of Washington, it may be necessary to use A.T.&T. landlines to reach the uplink from a Seattle University site. The training program will be delivered to at least four of the available CTS receive only sites located in Veteran's Administration hospitals in Region X. It is anticipated that the satellite demonstration will occur in the fourth quarter of year one and that delivery will involve one-way video and two-way audio capacity. Supporting educational materials may be developed; these will be mailed to downlink sites prior to program delivery. Seattle University will be responsible for obtaining site coordinators at the receiving sites, for announcing the training program and for developing any special materials that are required.

DRI support to the Seattle University RRCEP includes support for time of their representative to function as part of the core management team for the project plus partial support for instructional program development and/or modification of an existing training course for delivery via satellite. These costs plus technical support costs,

cost-sharing by the participants, etc., are fully documented in Part 7--Budget.

The user community concerned with training for persons working with the aging, as represented by the Institute of Gerontology at the University of Denver acting as lead institution, will not transmit programming in year one. This occurs because the Institute itself is in a start-up and curriculum development period, having been officially opened in November 1977. The Institute will, however, be in an observer status when a program for health care providers to the elderly is transmitted by South Oklahoma City Junior College.

DRI and the American Indian Higher Education Consortium will coordinate a CTS demonstration involving two AIHEC member colleges in South Dakota. These are the Oglala Sioux Community College in Pine Ridge and the Sinte Gleska Community College in Rosebud. A demonstration period of two to three days is anticipated. A transportable CTS earth station will be required because there are no available receiving sites in South Dakota or nearby Nebraska. Exhibits 4.2a and 4.2b list satellite earth stations in locations of interest as described throughout this operational plan.

The AIHEC demonstration will utilize programming available from the Native American Public Broadcast Consortium's library of materials. Because there is no CTS uplink in Lincoln, these materials will be transmitted from the Denver uplink. Other information/educational programming arranged by DRI and AIHEC will also originate from Denver. A primary purpose of the demonstration is to work with

EXHIBIT 4.2a

SATELLITE EARTH STATIONS EITHER IN SERVICE OR BEING CONSTRUCTED IN KANSAS, NEBRASKA, OKLAHOMA, & WYOMING

	CITY	OWNER	TYPE	FREQUENCY
CTS	Lawance, KA	-	R/O	12 GHz
	Oklahoma City, OK	-	R/O	12
	Cheyenne, WY	-	R/O	12
	Laramie, WY	-	R/O	12
	Sheridan, WY	-	R/O	12
PBS	Topeka, KA	-	R/O	4
	Wichita, KA	-	R/O	4
	Lincoln, NE	-	R/T	4/6
	Oklahoma City, OK	-	R/O	4
Commer-cial	Hutchinson, KA	Communications Serv., Inc	R/O	4
	Manahtten, KA		R/O	4
	McPherson, KA	McPherson CATV, Inc.	R/O	4
	Lawrence, KA	Sunflower Cablevision	R/O	4
	Overland Park, KA	Tele Cable Overland Park	R/O	4
	Arkansas City, KA	Ark. City Cable TV Serv.	R/O	4
	Topeka, KA	Washburn Univ. of Topeka	R/O	4
	Wichita, KA	Sunflower ETV	R/O	4
	Windfield, KA	Communications Serv., Inc	R/O	4
	Grand Island, NE	Added Attraction, Inc.	R/O	4
	Lincon, NE	TV Transmission	R/O	4
	Offutt AFB, NE	American Sat. Corp	R/O	4
	Ada, OK	Tans-Am TV	R/O	4
	Coalgate, OK	Atoka Cablevision	R/O	4
	Tulsa, OK	Tulsa Cable TV	R/O	4
	Casper, WY	Wentronics dba Comm. TV System of Wyoming	R/O	4
	Green River, WY	Pilot Butte Trans. Co.	R/O	4
	Chyenne, WY	Frontier Broadcast Co.	R/O	4

EXHIBIT 4.2b. EARTH STATIONS IN OTHER SELECTED AREAS

Site	Owner/Licensee	Type	Frequency
San Diego Area			
CTS		R/O	12 GHz
PBS	KPBS	R/O	4
Steele Valley	Western Union	R/T	4/6
NUEVO	American Satellite Corp.	R/T	4/6
DELUZ	A.T.&.T.	R/T	4/6
El Centro	Micro Cal - Imperial Valley CATV	R/O	4
San Diego	American TV and Comm.	R/O	4
El Cajon	COX Cable	R/O	4
Denver Area			
CTS		R/T	12/14
PBS	KRMA	R/O	4
PBS	KMPBN	R/T	12/14
Morrison	WTCI	R/O	4
Pueblo	Univ. Southern Colorado	R/O	4
Morrison	Rocky Mtn. Corp. for Public Broadcasting	R/T	4/6
Estes Park	Estes Park Home Theater	R/O	4
Lincoln Area			
PBS	KUON	R/O	4
PBS	NDTH	R/T	4/6
Lincoln	TV Transmission	R/O	4
Grand Island	Added Attraction, Inc.	R/O	4
North Dakota			
Fargo-PBS	KFME	R/O	4
Minot	Minot Cable Systems	R/O	4

EXHIBIT 4.2b. EARTH STATIONS IN OTHER SELECTED AREAS (continued)

Site	Owner/Licensee	Type	Frequency
Spokane Area			
CTS		R/O	12 GHz
PBS-Pullman	KWSU	R/O	4
PBS-Spokane	KSPS	R/O	4
Fairchild AFB	American Satellite Corp.	T/O	4
Spokane	COX Cable	R/O	4
Pullman	Washington State University	R/O	4
South Dakota			
PBS-Brookings	South Dakota State University	R/O	4
PBS-Vermillion	KUSD	R/O	4
PBS-Vermillion	University of South Dakota	R/O	4
Seattle Area			
CTS		R/T	12/14
PBS-Seattle	KCTS	R/O	4
PBS-Tacoma	KTPS	R/O	4
PBS-Lakewood	KCPT	R/O	4
Tacoma	Teleprompter	R/O	4
Tacoma	Gaylord Broadcasting	R/O	4
Tacoma/Lakewood	Clover Park School Dist.	R/O	4
Seattle	University of Washington	R/O	4
Issaquah	WTCI	R/O	4
Auburn	Clearview TV and Cable	R/O	4
Portland Area			
CTS-Portland		R/O	12
CTS-Vancouver, Wash.		R/O	12
PBS	KOAP	R/O	4
PBS-Medford	KSYS	R/O	4
CTS-Roseburg		R/O	12
CTS-White City		R/O	12
Milwaukie	State Board of Ed.	R/O	4

EXHIBIT 4.2b. EARTH STATIONS IN OTHER SELECTED AREAS (cont'd)

Site	Owner/Licensee	Type	Frequency
Portable Stations			
CTS-Western U.S.		R/T	12/14 GHz
KSSS-KSSZ	RCA Americom	R/T	6/4

the instructors at the Indian Community College also will have to participate in full-scale use of the technology. Demonstrating the use of software as an adjunct to their teaching is, in effect, an investment in continuing education. Also, the Boards of Trustees of the colleges, members of the South Dakota Board of Regents and representatives of the cooperating institutions in South Dakota (Black Hills State College, the University of South Dakota, South Dakota State University) would be involved when regular use of satellites for program delivery is established, and should therefore become part of the demonstration activities.

Other community colleges are part of the DEI plan with South Oklahoma City Junior College (SOCJC) serving as lead institution for this user group. During the first year, SOCJC will develop and transmit a course for training providers of services to the elderly in home-health resources.

Trainees will be persons from aging-related agencies and organizations and senior adult volunteers actively associated with these agencies in providing home-health care. The curriculum content has already been developed with HEW TITLE I funds but the original design anticipated primarily traditional presentation of the course. As developed, the course included 48 contact hours of instruction plus 16 hours of individual field projects to enhance geriatric nurse. Under subcontract to DEI, SOCJC will redesign and repackage the course and pilot test the new course via satellite delivery.

The pilot test will involve sites in Oklahoma City, Saratoga, Nebraska and Cheyenne, Wyoming. The community colleges in Saratoga

(Central Technical Community College) and Thurston (Lane Community College) already participate with ERIC in the Mid-Continent Leadership Consortium. There is thus an existing basis for sharing and for ongoing program development.

The ERIC-developed course will be transmitted from either Denver or Oklahoma City. There is presently an ITV uplink in Oklahoma City and in there a receiving site in Santiago (Grand Island--about 27 miles distant--does have a C-Ku Bit system). If the Denver ITV uplink is used, only Santiago will require the transportable ITV earth station. Denver will also be a receiving site in order that technical assistance personnel may participate.

The library community participation will be coordinated by the Montana Library Association (MLA) acting as lead institution. One or more continuing education courses will be delivered via satellite to at least four sites in Region 8. The Seattle ITV uplink will be used, if available. Use of the Fairbanks uplink is also a possibility. In both exceptional rehabilitation training, the receiving sites will all be TV terminals. MLA expects that MLA and the accredited graduate library school at the University of Washington to develop the training that will be delivered. State library agencies will assist in selection of training topics and sites. The Oregon State Library is especially interested in obtaining continuing education programs because the library school at the University of Oregon has been closed. Neither of the other Region 8 states (Idaho, Alaska) has an accredited library school.

Summary. The first year demonstrations proposed are necessarily modest in scope, because none of these groups have ever utilized satellite communications to deliver instructional programming. Since the first year must necessarily lay the groundwork for all future satellite use by these groups, it is essential that they bear a heavy portion of the developmental load for each demonstration. In the short run, such heavy involvement may result in less efficient demonstrations. However, this kind of involvement is much more likely to result in continued use of satellites after the demonstrations are completed, and in greater readiness for the work to be done in years two-four.

Another important first year accomplishment is the development of prototype sites. Most of the locations that will be used for the demonstrations have the potential to become "permanent" sites for multiple uses/users. Software development, the beginnings of user commitment to expenditures for equipment and/or landline connections to uplinks and preliminary exploration of the use of hybrid systems are also first year activities.

F. Second Project Year

Approach. The second year is dedicated to expansion and development in terms of increasing user community involvement in program development, and selection of new sites and user subsets. Sites and programs that do not appear to be feasible and/or cost-effective will be deleted upon recommendation from one or more of the committees which assist project management.

Program delivery will shift to commercial carriers with use of hybrid systems as appropriate to the sites selected. The potential availability of the non-CPB leased transponders of the public television satellite system will be of great interest to the five user communities for both non-broadcast uses and for retransmission via cable or other landlines. In Oklahoma and other states in which statewide educational broadcast systems are already in place, feeds from downlinks can be made available to a great variety of well-equipped sites. Probably, site and conference facility sharing by several user groups will result in expansion of existing facilities or in new construction. Experience will suggest desirable design features and floor plans. DRI anticipates that, even when direct broadcasting from satellites is commonly available, these community-based learning centers will still be preferred for continuing education and special adult education programming.

Year two will also see exploration of alternative means for distribution of materials which are used to supplement educational programs. Administrative uses of the delivery system will increase as use increases--especially since shared programming will require recording of student grades

at several locations, computation and allocation of costs and tuition monies among participating institutions, etc.

Exhibit 4.3 summarizes second year projects.

Narrative. The vocational rehabilitation sector will begin to convert more of the already developed programs to formats and packages which are most appropriate for satellite delivery. At the same time, new programs being developed will be designed specifically for such delivery. With telecommunications use already being listed as a national priority by the various units within the Rehabilitation Services Administration, the shift of training funds from developing traditionally delivered instruction to developing satellite-delivered instruction will be gradual but steady. Available training funds within individual state VR agencies will begin to support the new delivery system.

Region X plus one additional region will form the delivery area for VR staff training in year two. Any site having access to a 4 GHz downlink may participate. At least four vocational rehabilitation courses will be offered to two or more categories of VR personnel (counselors, supervisors, administrators, clericals). The VR community, especially the RRCEPs, will recommend sites and programs for delivery.

The Institute of Gerontology at the University of Denver will deliver one or two training courses for mid-career professionals working with the aging. Colorado and Rocky Mountain regional sites will be delivery points in this year. Program sharing with a San Diego site will be explored because of the program and technology interests in the San Diego area and at San Diego State University.

EXHIBIT 4.3. SECOND YEAR SATELLITE PROJECTS

	User Communities				
	Vocational Rehabilitation	Aging	Indian Community Colleges	Other Community Colleges	Libraries
Lead Institution	Region X Rehab. CE Program, Seattle University	University of Denver Institute of Gerontology	American Indian Higher Ed. Consortium	South Oklahoma City Jr. College	American Library Association
Available Uplinks	Seattle + one other	Denver	Lincoln/Denver	Denver/Oklahoma City	Seattle
Satellite Used	PBS-WESTAR, commercial	PBS-WESTAR, commercial	PBS-WESTAR, commercial	PBS-WESTAR, commercial	PBS-WESTAR, commercial
Minimum Services	Four VR staff training courses (6-12 hrs./course)	One staff training course (6-12 hrs./course)	Three associate degree courses + some special programs (45 contact hrs./degree course)	Four courses (first yr. course repeated + 3 additional ones) (12 hrs./course)	Four to 6 training programs (48 to 72 hrs. of programs)
Audience					
A. Where	Region X + one other region	San Diego, Calif., Grand Junction, Colo., Pueblo, Colo., Denver and the other training sites in the region	Selected sites in North Dakota, South Dakota, Oklahoma, California, Arizona	Three sites to develop programs; all members of the Mid-Continent Leadership Consortium (MLC) may receive programs	Four to 6 states to be determined by the ALA and CLENE
B. Who	All levels VR staffs working in state agencies	Mid-career training for those already working with the aging	Native Americans attending AIHEC's member institutions and others in the communities	Students attending any MLC member institution and adult ed. students	Library staffs, trustees, volunteers
Primary Technology Mix	One-way video; two-way audio; explore alternative means of materials distribution. Where feasible, satellite plus cable, satellite plus MDS or satellite plus ITFS. Access to resource collections (e.g., Great Plains Network) for preview and delivery. Some programming will be "live" and interactive.				

Because the Institute of Gerontology has recently been funded to develop a community services training center on aging as a two-year demonstration project, the need for a delivery system is increased. Five other community centers will be developing in other parts of the country and all of these will have the need to exchange programming and ideas. Development of these regional centers should increase the number and quality of training opportunities available in the area of gerontological services.

Indian community colleges will begin to share courses but the primary delivery area may continue to be in the Dakotas and possibly in Oklahoma. The South Dakota colleges may connect with the two major state four-year institutions in Brookings and Vermillion in order to facilitate the delivery of programs in nursing and for other extended degree programs. The absence of uplinks, other than the PBS uplink in Lincoln, Nebraska, is a problem. The Bureau of Indian Affairs may fund additional uplinks (through commercial carriers) because most of the reservations on which the community colleges are located are remote from downlinks, cable systems, ITFS systems, etc. Costs for land-based feeds to and from existing R/O sites will have to be calculated on a site by site basis. A commitment by AIHEC, member colleges and BIA will be necessary in order for this user community to make cost-effective use of the system. The potential is enormous and seems, to DRI, to be well worth the effort and dollars required.

The general community college sector will rapidly increase its program development process and use of the delivery system. The 11 member colleges of the Mid-Continent Leadership Consortium will become increasingly involved in both the process and the programming. At least three colleges,

including South Oklahoma City Junior College, will each develop and deliver a program and the program delivered in the first project year will be transmitted to additional sites. There is a strong possibility that Consortium members will begin to acquire R/O earth stations from the commercial carriers. States having statewide educational broadcasting networks will be able to retransmit satellite-delivered programming to a large number of additional sites.

Second year community college programming will include both urban-oriented and rural-oriented topics. Major efforts will be devoted to working with instructors who want to become more involved with nontraditional programming and to disseminating information about the emerging satellite delivery project to community college administrators and professional groups.

Use of satellites to deliver library continuing education will be expanded in year two to include four-six courses/programs prepared or arranged by state libraries and library schools with support and direction from the American Library Association and CLENE. State library continuing education specialists may participate in advanced training offered by CLENE as part of its continuing program development. Should a software clearinghouse for library CE materials develop at DRI or elsewhere, this mechanism for support of training would also be tested. Access to the Public Television Library or other existing resource collections will be possible during year two.

CLENE forsees increasing use of the delivery system by state library agencies for training their own staffs and for statewide training. State

libraries receive federal monies from the Library Services and Construction Act which can be used for training. Once the value of the delivery system and the quality of program content can be demonstrated, with state library agency support, a nationwide state-centered CE system could become a reality.

Summary. Year two will see increased effort toward formation of the infrastructure necessary for each user community to organize for non-traditional delivery of continuing education and training programs and associated services. For some communities, development of a regionally oriented commitment to continuing education will also be necessary. The involvement of professional associations will increase as will the use of learning units other than those which occur in 6-12 hour clusters.

With most second year programming being switched to commercial carriers and to the Public Television Satellite System (for which users will be charged), the user communities will begin to assume full responsibility for costs and operational details. Programming sophistication will increase with greater use of live programming and real-time interaction to enhance the instructional process. Access to resource collections will increase the program choices available and use of hybrid systems will increase the number of sites reached. Use of available technologies as a means of distributing materials will be explored in year two. It is anticipated that some manufacturers will welcome the opportunity to field test prototype models and that DRI's aggregate communities will provide many opportunities for this.

G. Third and Fourth Project Years

Operational details for the third and fourth project years are difficult to provide because policy, technical and program refinements and requirements will be continuously evolving from first and second year activities. DRI's objective is to bring each user community to the point of totally assuming responsibility for planning, funding and producing continuing education and training programs which they will deliver on a national basis using satellites and other technology. Ongoing support and organizational bases for the project will be within each community.

Third year efforts in each user community will see expanded programming--more regions, more individual sites, more programs and more trainees. DRI anticipates that three communities--vocational rehabilitation, libraries, and community colleges--will be nearly operational and self-supporting by the end of the third project year. This will be possible because of long-standing commitments to provision of CE and training, predisposition to use technology and vigorous professional associations.

Specifics with regard to changes in technology by 1980-81 are not known. What can be predicted is large increases in the number of earth stations available. For example, RCA expects to increase from 187 earth stations which are available now to having 700 earth stations available in 1980. Bandwidth availability will be greater and more efficiently used because of video, speech, and data compression devices. Users will be able to buy end-to-end services without the need for technical knowledge or in-house technical specialists. Brokers similar to PSSC will work with individual users; commercial carriers will have technical representatives to make arrangements on a larger scale.

The technology mix available for programming and the ability of user groups to exercise the technology will be much increased. Especially needed are individually paced programs which can be accessed on demand. Interactive video telelectures may be cost-effective and timely, and inexpensive means of materials distribution using facsimile transmission or computer output microfilm may be available. Perhaps, more importantly, the pool of programs available for distribution, the number of equipped community-based learning centers and the professional and support personnel needed to operate the system will be in place or rapidly developing.

In year four, the remaining communities--aging and Indian community colleges--will achieve operational status. The delivery system will be primarily in the commercial sector with additional access and services provided through the Public Television Satellite System and the National Public Radio Satellite System. DRI expects that many subsets of the five user communities will be using the delivery system and contributing to its ongoing, self-supporting status. The infrastructure will be in place in each community.

Phase out of DRI and PSSC participation will be completed in year four. All management and accounting systems developed during the four year period will have been turned over to the user communities. Marketing and evaluation strategies will have been refined, adopted as appropriate by the various users and widely disseminated.

H. Project Goals and Objectives

A year by year list of major project activities follows.

Project goals:

- To operationalize a system of satellite-based continuing education and training delivery in five user communities within a four-year period.
- To have the operational system become self-supporting in each user community within a four-year period.

Objectives	As Evidenced By
FIRST YEAR	
1. To sign an agreement/subcontract with a lead institution in each user community	-Signed agreements/ subcontracts
2. To sign a subcontract with PSSC	-Subcontract
3. To form policy, technical and program committees having DRI, PSSC and lead institution representatives	-Committee rosters
4. To form an external advisory board	-Board roster and acceptance letters
5. To schedule and hold committee and board meetings	-Minutes of meetings
6. To schedule and complete quarterly site visits	-Trip reports
7. To set up and implement teleconference system	-Operational system and contract with DARCOM
8. To assist lead institutions in establishing advisory committees with each user community	-Rosters for five advisory committees
9. To establish liaisons with NIE, NASA, CPB, NTIA	-Designated contact person in each agency
10. To establish liaisons with RCA, Western Union, IBM	-Designated contact person in each company

Objectives	As Evidenced By
First Year (cont.)	
11. To develop and advertise an evaluation RFP	-RFP and mailing list
12. To hire an external evaluator	-Contract with evaluator
13. To finalize site selection for demonstrations	-List of sites
14. To define and prioritize technical requirements	-Prioritized list
15. To establish financial records system	-Procedures manual and forms
16. To identify funding sources within each user community	-Five prioritized lists of programs and sponsors
17. To develop local and professional support bases within each user community	-Meetings, publications, contacts by lead institution and SRI
18. To schedule demonstration projects in four user communities using CTS	-Schedule and NASA/PSSC agreement
19. To train site coordinators hired by lead institutions	-Training manual
20. To transmit at least one training program as a demonstration project in three user communities	-Completed demonstration
21. To transmit video programs and information about use of software in instruction as a demonstration at two Indian Community Colleges	-Completed demonstration
22. To meet with NIE project monitor at least twice	-Minutes of meetings
23. To submit detailed second year continuation plan and budget to NIE	-Plan and budget
24. To submit final report to NIE	-Report

Objectives	As Evidenced By
SECOND YEAR	
1. To renew subcontracts, as appropriate	-Renewed contracts
2. To schedule and complete quarterly site visits	-Trip reports
3. To schedule and hold committee and board meetings	-Minutes of meetings
4. To continue evaluation activities including for individual projects	-Renewed contract, evaluation reports
5. To refine project selection	-Revised list
6. To refine site selection	-Revised list
7. To refine technical requirements	-Revised list
8. To review project goals and activities	-Revised list
9. To make go/no go decisions about user groups	-Revised list, if needed
10. To begin use of commercial satellites	-Agreements with one or more commercial carriers
11. To begin to use Public Television Satellite System	-Agreements with one or more PTS licensees
12. To facilitate capacity building in each user community	-Marketing and development assistance to lead institutions and selected sites
13. To develop telecommunications usage as a national priority in two additional user communities	-Professional association statements, funding priorities in federal agencies
14. To increase the total amount of IE funds available in at least one additional user community	-Professional association statements, total funds allocated in community
15. To review project organization/ management structure	-Revision, if required

Objectives	Be Achieved By
General Goal (cont.)	
16. To provide non-GTE funding support for user participation which is over and above user commitment	-Non-GTE funds granted
17. To deliver at least 10 training programs among the five user communities	-Programs delivered
18. To reach at least two states with delivered programs	-Steps to obtain programs delivered
19. To deliver some programs available from one or more nonprofit organizations (e.g., Public Television Library)	-Programs delivered
20. To deliver some live, interactive video programs	-Live programs delivered
21. To have either satellite dish cable, or satellite dish (TVRO or satellite dish DBS)	-Item completed
22. To develop professional association involvement with the TE delivery system	-Formal participation by one additional professional association
23. To meet with GTE project monitor at least twice	-Minutes of meetings
24. To submit detailed third year continuation plan and budget to GTE	-Plan and budget
25. To submit final report to GTE	-Report
Other Tasks	
1. To revise objectives, as appropriate	-A revised objectives
2. To schedule and complete quarterly site visits	-Trip reports
3. To schedule and hold committee and board meetings	-Minutes of meetings
4. To continue evaluation activities	-Revised contract, evaluation reports

Objectives	As Evidenced By
Third Year (cont.)	
5. To refine project selection for remaining two years	-Revised list
6. To refine site selection for remaining two years	-Revised list
7. To refine technical requirements for remaining two years	-Revised list
8. To review project goals and activities for remaining two years	-Revised list
9. To make go/no go decisions regarding sites, participants, technologies	-Action memos
10. To attract non-NIE funding support for user participation within all five user communities	-Amount of funds, grant and number of different sources
11. To combine the use of the delivery system for CE with other uses	-New uses, user subsets
12. To deliver at least 30 training programs among the five user communities	-Programs delivered
13. To reach at least 18 states with delivered programs	-Sites to which programs delivered
14. To develop telecommunications usage as a national priority in the remaining two user communities	-Professional association statements, agency funding priorities
15. To facilitate turnover of CE and delivery system to relevant professional associations	-Actions taken, professional association organizational charts
16. To plan for turnover of management and accounting systems to user communities	-Memos, documentation of procedures
17. To operate three user communities on a self-supporting basis	-Financial documentation
18. To increase the technology mix use in program production, packaging and delivery	-Technologies used, programming delivered

Objectives	As Evidenced By
Third Year (cont.)	
19. To meet with NIE project monitor at least twice	-Minutes of meetings
20. To submit detailed phase out plan for year four to NIE	-Plan and budget
21. To submit final report to NIE	-Report
FOURTH YEAR	
1. To write and sign subcontracts, if needed	-Necessary subcontracts
2. To schedule and hold remaining committee and board meetings	-Minutes of meetings
3. To schedule and complete final site visits	-Trip reports
4. To schedule all phase out activities for DRI, FSSC and remaining subcontractors	-Documentation
5. To operate remaining two user communities on a self-supporting basis	-Financial documentation
6. To complete turnover of CE and delivery system to relevant professional associations	-Actions taken, professional association organizational charts
7. To deliver training nationally	-Delivery sites, number of users, user community documentation
8. To complete evaluation activities	-Final reports
9. To turn over management and accounting systems to user communities	-Documentation, letters of transmittal
10. To meet with NIE project monitor at least twice	-Minutes of meetings
11. To submit final report to NIE	-Report

PART 5. MANAGEMENT PLAN

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Organizational arrangements needed for implementing this plan are presented here. Basic assumptions and overall policies of the management plan are specified first. Key elements of the organization, including the subcontracts to be awarded, are then reviewed. Next, a milestone chart is used to identify all major events in the five user communities project. Finally, a mechanism is described for adequately involving the principal interest groups and organizations in setting goals, implementing strategies for achieving goals, and evaluating processes and outcomes; special consideration is given to the overall management responsibilities of the Denver Research Institute (DRI), and to the functional responsibilities of persons representing the five user communities--vocational rehabilitation agencies, aging interest groups, Indian community colleges, other community colleges, and libraries.

Basic Assumptions and Overall Policies

Basic assumptions. The management plan rests on four testable assumptions.

1. A reasonable potential exists within the five user communities represented for their becoming cost-effective users of telecommunications technology.

2. Satellite-based technology can be integrated cost-effectively with the current array of technologies employed in the five user communities to provide continuing education and training services.

3. The five user communities represented in this plan will be successful in attracting financial resources from institutions other than the NIE to be used in sharing the costs of achieving the operational and self-supporting goals of this plan.

4. A considerable potential exists in each of the five user communities for uses of satellites that go beyond the continuing education and training applications envisioned in this plan.

Evidence supporting these basic assumptions is presented in Part 2 of this plan. The assumptions are considered "basic" in the sense that a clear failure by any of the five user communities to satisfy the assumptions would seriously jeopardize that community's ability to participate successfully in this project.

Overall policies. The management approach proposed in this plan is based upon examination of the projects' objectives and goals and experience in the use of RD&D management techniques DRI has developed and successfully applied. The approach proposed is designed to produce a functional management structure specifically focused on the project objectives and goals and on the needs of NIE.

Seven critical management issues will be stressed in implementing the plan:

1. Results-oriented--Although the five communities project is designed to facilitate evaluation, its primary thrust is to achieve measurable and significant results in introducing satellite-based delivery of continuing education and training services; thus, the management philosophy is "results" oriented, with a commitment to understanding both success and failure.

2. Integration of policy and effort--The project will be administered as an integral part of the continuing education and training activities in the five user communities, rather than as an isolated effort to deliver such services.

3. Flexibility--During the course of the four-year project, both gradual and unexpected requirements to modify plans, programs and implementation efforts will undoubtedly arise. Care will be exercised, therefore, in executing subcontracting agreements to permit maximum flexibility in responding to obvious and desirable changes in direction provided such changes contribute demonstrably to accomplishing project objectives and goals.

4. Communications--Because of the involvement of many user communities, technical groups and others in the project, communication among the parties will be given a high priority. To maintain regular contact among all of the core management team, DRI will establish a monthly teleconference schedule. Regular teleconference locations will be at the DRI and the PSSC offices in Denver and at each of the lead institution sites. Additional teleconference sites will be added as necessary.

   Two teleconferencing options are available through the Darome Company. On a subscription basis, DRI can select either bridge service only ($20 per location per hour plus phone call charge) or bridge and credit card service ($40 per location per hour--no phone charge). There is a one-time subscription fee of $300 and the minimum billing is $50 per month. The benefits of this arrangement include the ability to arrange permanent conference times (weekly, monthly) and to schedule conference dates and times, weeks or months in advance.

   On a non-subscription basis, the bridge service charge is $25 per location per hour plus phone charges and reservations can be made only 48 hours in advance of a conference.

5. Control--A system of accountability will be developed for all elements of the project designed to produce a unified final product. Included in the control system will be a series of project schedules that specify performance periods, report dates and meetings. DRI will review on site the performance of all subcontractors, including consultants, every three months.

6. Assessment--The assessment methodologies employed throughout the project will be sensitive to identifying not only intended and beneficial outcomes,

but also (a) desired but unrealized results, and (b) other effects that were not anticipated.

7. Knowledge utilization--Knowledge gained in this project will be disseminated as widely as possible within the five communities of interest represented to stimulate not only awareness, but also appropriate use of project results.

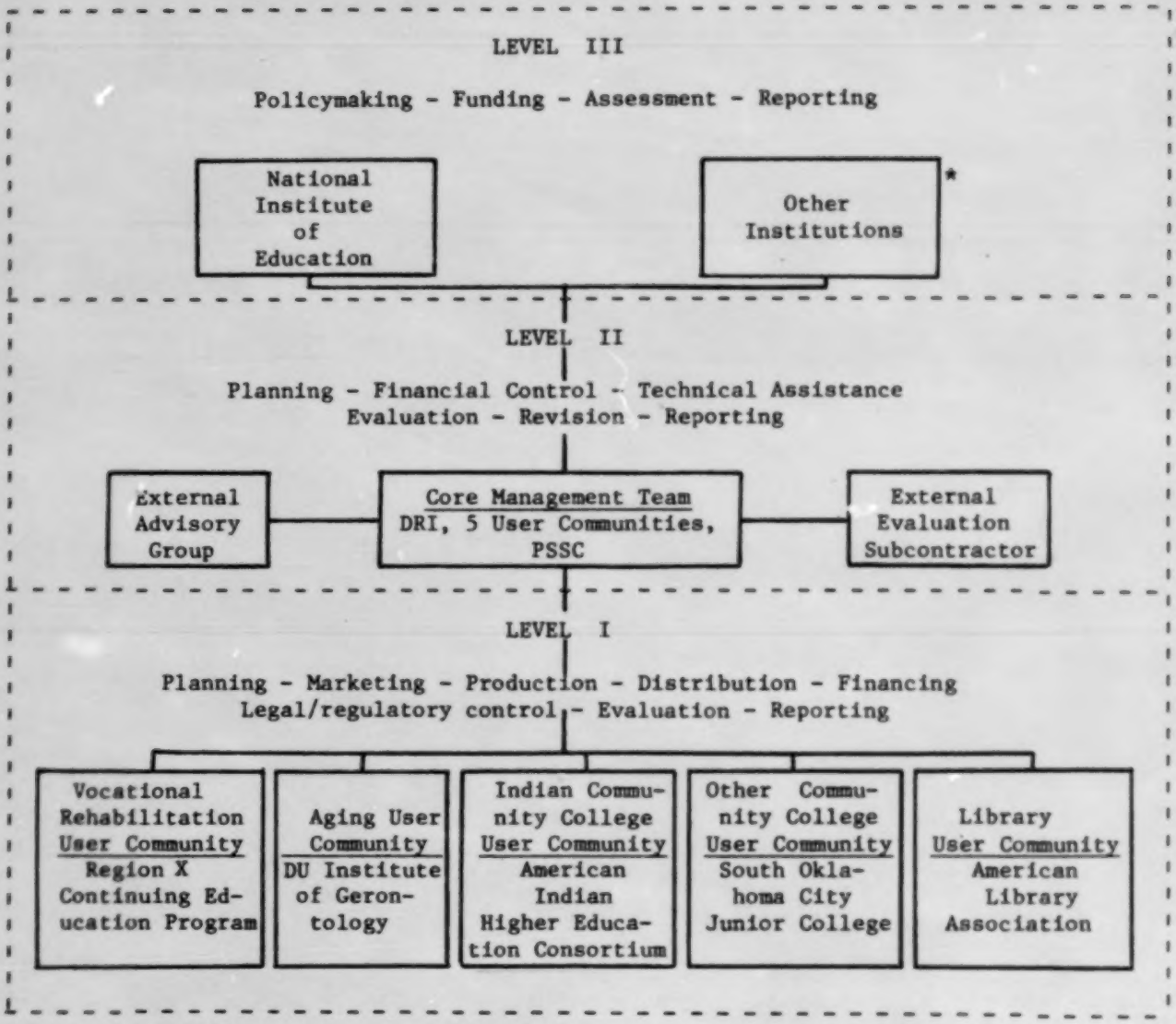
Key Elements of the Project's Organization Structure.

Responsibilities for carrying out the work on the five user communities project are divided into the three levels shown in Exhibit 5.1.

Level III organization structure. At Level III, both the National Institute of Education and other institutions to be identified early in Phase I of the project will be responsible for assuring that all proposed activities in the project are appropriate in terms of existing laws, regulations and rules at the federal, state, and local government levels. Although Level III organizations obviously share concerns for policy and assessment matters, this plan does not call for the establishment of any special mechanisms for formal cooperation among them; rather, existing interagency task forces, federal regional councils, etc., probably will be able to accommodate the special requirements of this project on a routine basis within the framework of their operations. At the same time, each Level III organization providing project funding obviously will develop internal arrangements for assuring that particular aspects of project activities satisfy its own set of policies and reporting requirements.

EXHIBIT 5.1

ORGANIZATIONAL STRUCTURE
FOR THE FIVE USER COMMUNITIES
TELECOMMUNICATIONS PROJECT


LEVEL III
Policymaking - Funding - Assessment - Reporting
National Institute of Education
Other Institutions *
LEVEL II
Planning - Financial Control - Technical Assistance
Evaluation - Revision - Reporting
External Advisory Group
Core Management Team
DRI, 5 User Communities, PSSC
External Evaluation Subcontractor
LEVEL I
Planning - Marketing - Production - Distribution - Financing
Legal/regulatory control - Evaluation - Reporting
Vocational Rehabilitation User Community
Region X Continuing Education Program
Aging User Community
DU Institute of Gerontology
Indian Community College User Community
American Indian Higher Education Consortium
Other Community College User Community
South Oklahoma City Junior College
Library User Community
American Library Association

* Funding might be channeled through Level I funding organizations or directly into Level II.

The proposed organization structure at Level III reflects clearly a commitment to obtaining funding from multiple institutions. The proposed DRI management plan offers the potential of simplifying the funding process and increasing the amount of work that can be undertaken with the available funds. Exhibit 5.2a shows the typical pre-five communities project funding flow. Each community of users seeks its own funds; frequently there are multiple seekers within each community with the result that the work accomplished may be duplicative or, at least, discontinuous and non-cumulative.

Exhibit 5.2b shows the possible post-project flow of funds. The user communities now have lead institutions to act as focal points for telecommunications R&D and the tasks that are repetitive in nature--e.g. evaluation, equipment procurement--are batched and handled centrally by DRI and PSSC.

Details of proposed funding arrangements are presented in Part 7 of this plan. It is sufficient to note here that the following cost-sharing formula, suggested in RFP NIE-R-77-0012, will be used during the course of the project:

Fiscal Year	NIE Share	Non-NIE Share
1978	85%	15%
1979	70%	30%
1980	50%	50%
1981	30%	70%

DRI expects that the non-NIE share will actually reach as high as 75 percent in year three.

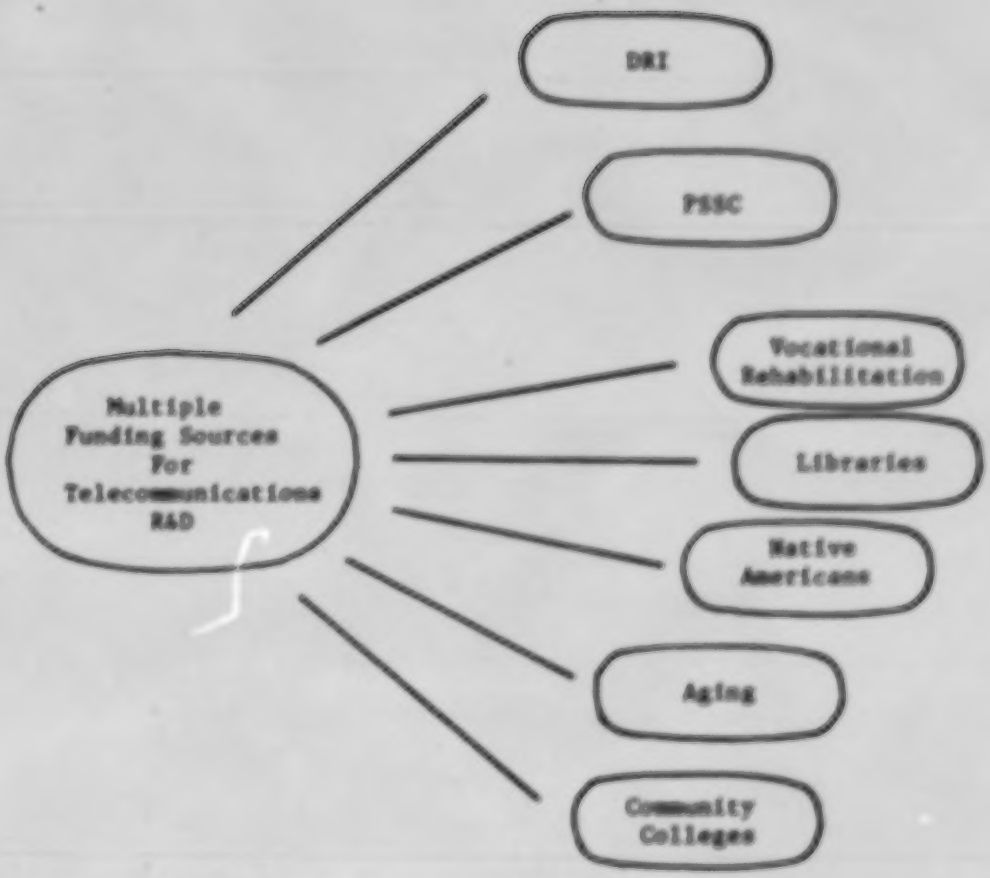


EXHIBIT 5.2a
Pre-five Communites
Project Funding Flow

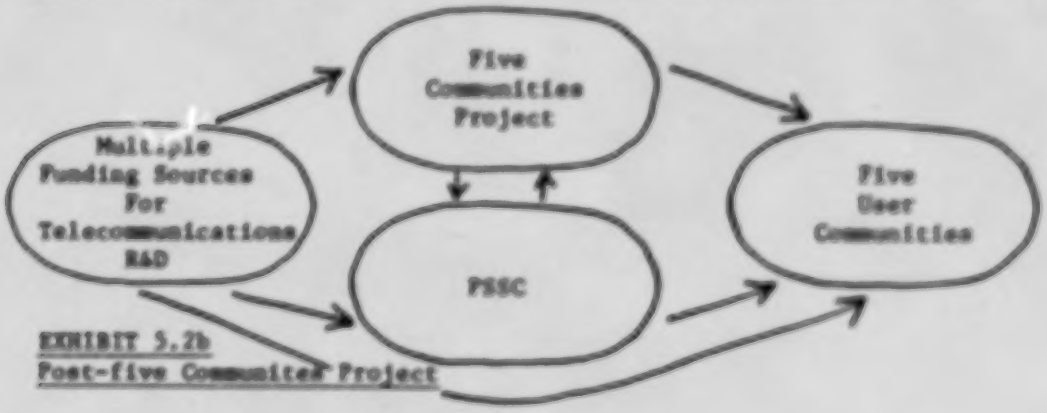


EXHIBIT 5.2b
Post-five Communites Project

Level II organization structure. At Level II, a core management team will be established for the project. It will consist of the Denver Research Institute (DRI), representatives of the lead institute designated in each of the five user communities, and the Public Service Satellite Consortium. DRI members of the core management team will be Dr. Ruth Katz, Dr. Anita West, and Mr. James Freeman, all of whom have had considerable experience in managing large-scale research and development projects in the telecommunications and continuing education fields. Dr. Katz will be the project director and head of the core management team.

Representing the five user communities will be Dr. Susanne Brugere, of the Region X Rehabilitation Continuing Education Program at Seattle University; Dr. Henry Welch, Director of the Denver University Institute of Gerontology; Mr. Leroy Clifford, Executive Director of the American Indian Higher Education Consortium; Dr. Dale Gibson, President of South Oklahoma City Junior College; and Mr. Robert Wedgeworth, Executive Director of the American Library Association. Mr. Dell Ogden, Director of Engineering for the Public Service Satellite Consortium, will represent PSSC.

The Public Service Satellite Consortium, of which DRI is a member, will have major responsibility for technical coordination

and support during the four-year project. PSSC's technical facilities and staff are in Denver making liaison with DMI staff members especially convenient. PSSC will as required:

- provide general expertise in telecommunications
- maintain liaison with regional and national telecommunications agencies including public television stations and with the commercial sector
- assist in procuring equipment for user community participants
- assist in scheduling
- assist in installation, maintenance and management of equipment and facilities
- assist in testing and evaluation
- maintain familiarity with legal and regulatory concerns

Resumes for the principal project participants are presented in Part 6 of this plan.

Early in the project, probably by no later than the sixth month, an external project advisory group will be established to advise and guide the core management team in all phases of project activities. The criteria for membership in this group and the principal responsibilities of this group are presented in more detail later in this part of the plan.

By the sixth month of the project, the core management team will select a qualified organization to conduct a formal, external evaluation of the project. A list of qualified

organizations engaged in evaluation research activities will be generated during the first two months of the project. As part of this process, it is anticipated that the Commerce Business Daily will be used to alert prospective bidders to the forthcoming evaluations and to invite interested organizations to submit letters of interest and qualifications statements. Responding organizations will be screened by the core management team during the third month, culminating in the selection of the three most-qualified bidders. The evaluation RFP will be prepared during the third month and issued during the fourth month. Selection of the evaluation contractor will conclude in the eighth month.

Level I organization structure. Lead institutions have been selected to represent the potential interests of their respective communities in the use of satellite-based technology for delivering continuing education and training services. Since the communities differ substantially from one another in terms of their readiness to adopt satellite-based technologies (see Part I of this proposal), it will be necessary to set goals and develop use strategies that are appropriate to each user community. The lead institutions identified in Exhibit 5.1 were selected to spearhead these activities in each case because of their recognized leadership, credibility, and competence for innovation within the five user communities. Each of the lead institutions will be uniquely able to ensure the

[redacted] material, financial, and human resources that are so urgently needed to accomplish the operational and self-supporting goals of this four-year project.

Internal organization structure and time commitments. The internal organizational structure proposed for year one of the project is shown in Exhibit 5.5. EDI will assemble a management team designated as the "General Contractor." Dr. Burt K. Bass, whose background credentials are presented in Part B of this plan, will be the project director. She or I have a core staff of three professionals who will have clearly defined functions and responsibilities. It is anticipated that the [redacted] of the five-year organizational structure will be continued during the four-year project. EDI's commitment to flexibility, however, means that an organizational structure different from the one used to launch the project may be warranted as the project progresses; if so, proposals to MTB for funding in years two and four will recommend desirable changes.

Exhibit 5.6 shows the core management team composition by functions and person-months of professional and support staff needed to ensure orderly coordination of project activities. The core management team will spend an estimated total of 7.80 professional years and 7.55 support staff years over the four years of the project.

Schedule

Exhibit 5.7 presents an overview of the project schedule. EDI will maintain general control of the project to complete the

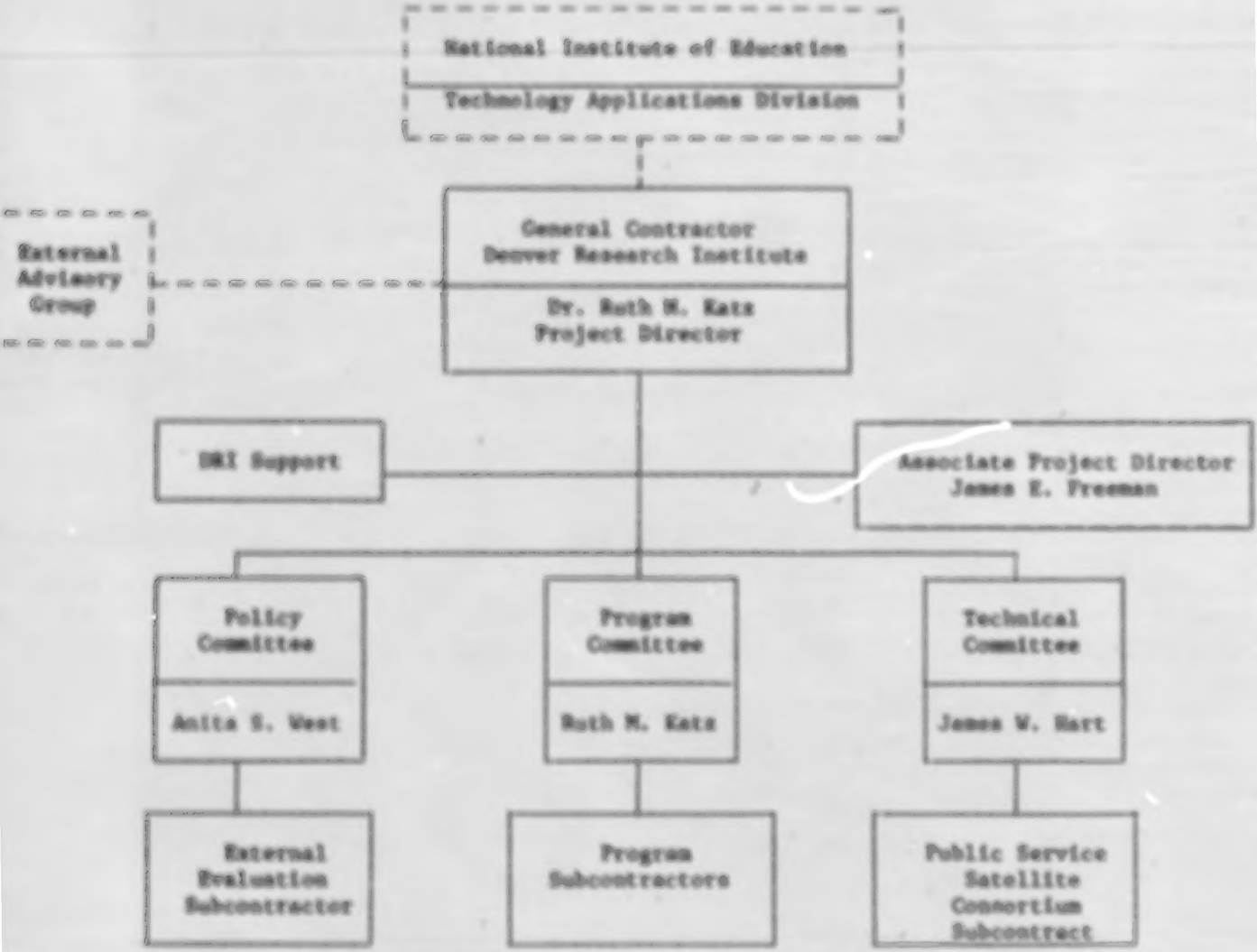


EXHIBIT 5.3 INTERNAL ORGANIZATION STRUCTURE--
THE FIVE COMMUNITIES PROJECT

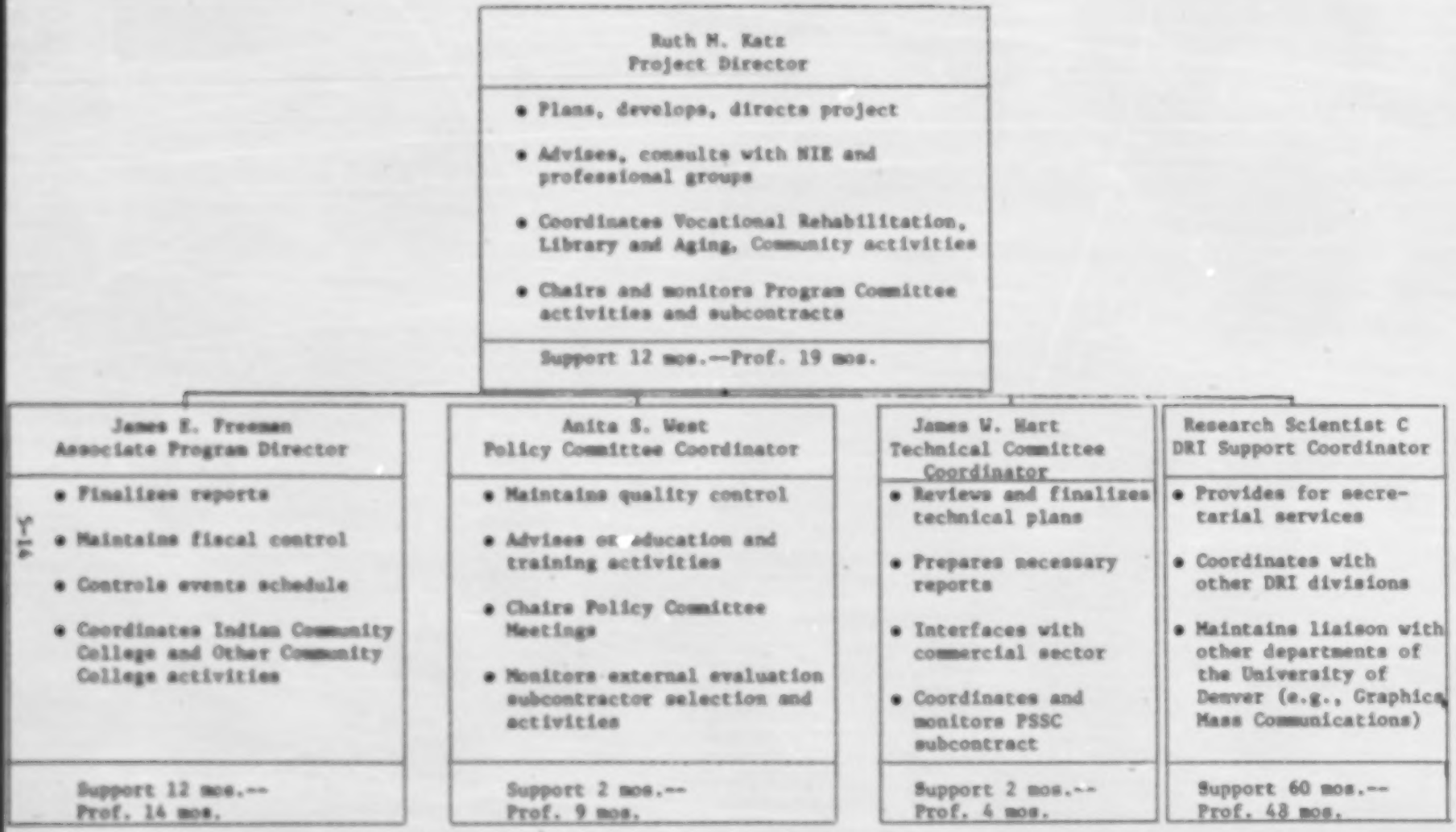
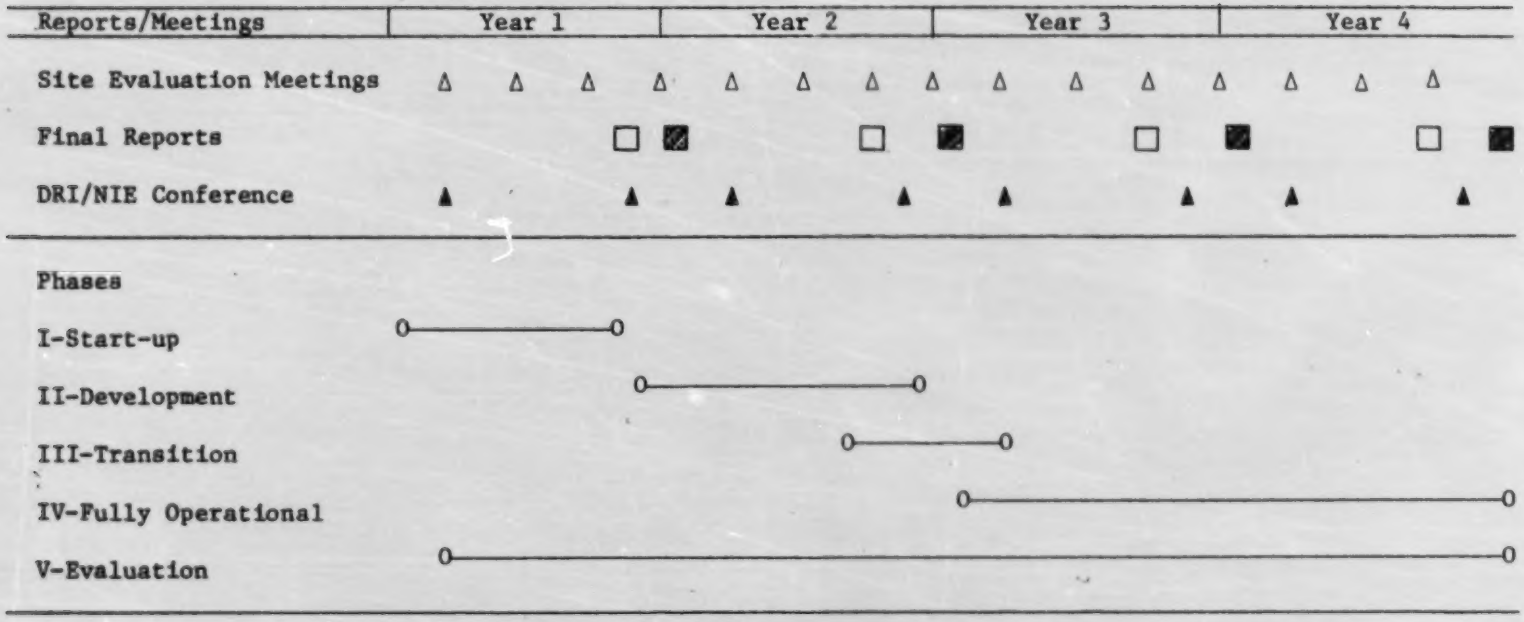

Ruth M. Katz
Project Director
• Plans, develops, directs project
• Advises, consults with NIE and professional groups
• Coordinates Vocational Rehabilitation, Library and Aging, Community activities
• Chairs and monitors Program Committee activities and subcontracts
Support 12 mos.--Prof. 19 mos.
James E. Freeman
Associate Program Director
• Finalizes reports
• Maintains fiscal control
• Controls events schedule
• Coordinates Indian Community College and Other Community College activities
Support 12 mos.-- Prof. 14 mos.
Anita S. West
Policy Committee Coordinator
• Maintains quality control
• Advises on education and training activities
• Chairs Policy Committee Meetings
• Monitors external evaluation subcontractor selection and activities
Support 2 mos.-- Prof. 9 mos.
James W. Hart
Technical Committee Coordinator
• Reviews and finalizes technical plans
• Prepares necessary reports
• Interfaces with commercial sector
• Coordinates and monitors PSSC subcontract
Support 2 mos.-- Prof. 4 mos.
Research Scientist C
DRI Support Coordinator
• Provides for secretarial services
• Coordinates with other DRI divisions
• Maintains liaison with other departments of the University of Denver (e.g., Graphics, Mass Communications)
Support 60 mos.-- Prof. 48 mos.

EXHIBIT 5.4 FUNCTIONS/PERSON-MONTHS (SUPPORT AND PROFESSIONAL TIME) REQUIREMENTS: PROJECT CORE MANAGEMENT TEAM

EXHIBIT 5.5 PROJECT SCHEDULE AND MILESTONES



Key: 0 = Effort formally begins/ends

□ = Preliminary report

△ = Site visits

▨ = Final report

▲ = Conference

tasks on time and within budget. Exhibit 5.5 also identifies project milestones such as meeting and report dates.

Dr. Ruth Katz will have general responsibility for the timely completion of major tasks. In the event that there are likely to be performance failures, the proposed management and cummunication structures will permit early detection and necessary remedial action. Representatives of the five user communities, and the coordinators of the policy and technical committees will submit specific activity schedule plans, as well as informal monthly technical and financial progress reports to the project director.

Activities Occurring in Each Project Phase

DRI has identified four phases of activity that can be predicted during the four-year project period. The DRI plan involves five separate user communities, each of which is starting at a different point of readiness. Thus, the communities will vary in the rate at which they move from one phase into another. The lead institutions, functioning as part of the core management team will help to specify activities, priorities and the time frame within which they occur. In general, the activities for each phase include:

Start-up phase.

- Complete project staffing.
- Obtain signed agreements/subcontracts with each lead institution, specifying goals, mutual responsibilities, cost-sharing arrangements, etc.
- Sign subcontract with PSSC.
- Form policy, technical and program committees having DRI, PSSC and lead institution representatives.

- Schedule meetings and site visits.
- With advice from committees, establish external advisory board.
- Set up teleconferencing system.
- Work with lead institutions to establish or formalize already established advisory committees within each user community.
- Establish liaison with NIE, NASA, CPB, NTIA.
- Establish liaison with commercial sector.
- Develop evaluation RFP.
- Hire external evaluator.
- Finalize site selection.
- Define and prioritize technical requirements (including requirements of FCC, NASA).
- Establish financial records system and tie with DRI accounting.
- Within each user community and each committee, establish process for setting and refining goals.
- Identify funding sources.
- Build awareness (vertically) within each user community of technology, of continuing education (CE) needs and of NIE-funded project.
- Develop local and intra-professional support bases.
- Schedule demonstration projects.

Development phase.

- Continue site visits.
- Operate advisory groups/committees.
- Initiate evaluation activities.
- Train site coordinators.
- Conduct short-term demonstrations using CTS.

- Refine project selection.
- Refine site selection.
- Refine technical requirements.
- Review project goals and priorities and revise as needed.
- Make go/no go decisions on user groups/projects based on specificity of objectives, market estimates, commitments.
- Begin use of commercial satellites and Public Television Satellite System (PTSS).
- Provide marketing/development assistance to lead institutions and selected sites.
- Work with user communities to develop telecommunications as a national priority.
- Work with user communities to pool available CE funds for larger-scale, innovative delivery systems.
- Review and refine project organization/management structure.

Transition phase.

- Shift completely to commercial satellite carriers and PTSS.
- Deepen professional association involvement in CE delivery system/network.
- With user communities, increase number of CE specialists prepared to use satellite-based delivery systems.
- Identify additional user subsets.
- Identify gaps in CE/technology infrastructure within each user community.
- Set strategic goals for achieving self-support status within each user community.
- Make go/no go decisions about sites, participants, technologies.

Operational phase.

- Institutionalize CE/delivery system network within each community.
- Production/distribution of programs/packages assumed within each community.
- Marketing/evaluation activities assumed within each community.
- Define ongoing financial base of each user group.
- Increase number and variety of courses/programs delivery.
- Increase number and variety of audiences impacted.
- Increase technology mix.
- Increase number of sites involved.
- Decrease committee rules and reestablish committee structure in each community.
- Project income/expenditures of each user community.
- Schedule programming for duration of project.
- Phase out DRI/PSSC management and technical support activities.

NOTE: By July 1 of each project year, DRI will submit a detailed continuation plan specifying goals, activities, personnel, costs, for another one-year period.

PART 6. PERSONNEL

This plan was prepared and will be implemented by representatives of several organizations with major interest and considerable experience in the fields of continuing education and telecommunications: The Denver Research Institute, the Public Service Satellite Consortium, Seattle University, South Oklahoma City Junior College, the American Indian Higher Education Consortium, and the American Library Association.

Plans for managing relationships among these institutions are specified in Part 5; so, too, are the responsibilities and levels of professional effort for the core management team. Dr. Ruth M. Katz, Project Director, plans to spend approximately 19 person-months on this project over its four-year life. Mr. James E. Freeman, Associate Project Director, will spend approximately 14 person-months on the project. Dr. Anita S. West, Policy Committee Coordinator, will spend an estimated nine months over four years. And James W. Hart, a consultant serving as Technical Committee Coordinator, will spend approximately one person-month on the project each year. An additional one person-month per project year will be spent by the five lead-institution representatives (or their designated alternates): Dr. Susanne Bruyere (Vocational Rehabilitation), Dr. Henry Welch (Aging), Mr. Leroy Clifford (Indian Community Colleges), Dr. Dale Gibson (Other Community Colleges), and Mr. Robert Wedgeworth (Libraries).

Resumes for core management team members follow.

RUTH M. KATZ, Research Scientist

B.A., Chemistry, Clark University
M.L.S., Ph.D., Rutgers University

Dr. Katz's major professional interests are in the management of information resources, continuing education, delivery of public services and the design, production and evaluation of multimedia educational products. Under grants from the U.S. Office of Education, she designed and produced a series of seven video programs about public library services to the aging and a series of sixteen videotapes of a documentary nature for use as in-service training for rural library staffs. Both series are in national distribution.

Dr. Katz is presently directing two projects concerned with the educational applications of telecommunications. One, funded by the Rehabilitation Services Administration, is examining the feasibility of using telecommunications to deliver in-service training to state vocational rehabilitation and blind agency staffs. The other is a planning grant from the National Institute of Education concerned with using communications satellites to deliver continuing professional and paraprofessional education. Dr. Katz has recently completed a study of the potential uses of satellites in the vocational rehabilitation system, and, as a consultant to the Public Service Satellite Consortium, Dr. Katz explored the potential uses of satellite systems by libraries.

Among other interests, she is concerned with library and information systems development in Latin America and defining information and library needs characteristic of the Rocky Mountain States. Under contract to the Colorado State Library, Dr. Katz has recently completed a series of eight reports documenting the needs of the regional library service systems in Colorado.

Prior to joining the University of Denver in 1974, Dr. Katz had considerable experience in university and scientific libraries. She was Assistant University Librarian at Rutgers University and Physical Sciences Specialist in the Science and Technology Division of the Library of Congress. She spent eight years in the Washington, D.C. area working for Documentation, Inc., System Development Corporation, and the Library of Congress.

Dr. Katz is very active in national professional associations including the American Library Association, Western Gerontological Society, Mountain Plains Library Association, the Association of State Library Agencies, and the American Society for Information Science. She is a member of the American Association for Higher Education, American Educational Research Association, Latin American Studies Association and Women's Institute for Freedom of the Press. She consults for the Colorado State Library and serves on the Executive Committee of the University of Denver Institute of Gerontology. She has written many publications concerned with the design and use of educational packages, use of satellites for information exchanges and training, and the training of library personnel in remote areas.

JAMES E. FREEMAN, Senior Research Scientist

B.A., Philosophy, Loras College, Dubuque, Iowa
M.A., Mass Communications, University of Denver
Completed course work for doctoral degree in
International Studies, University of Denver

Mr. Freeman's major professional interests are in the fields of technology assessment, energy policy, information science, and international development.

Under a grant from the National Science Foundation, he is assessing the social and psychological impacts of citizen band radio in the United States. He also is assisting the Solar Planning Office West and the State of Colorado in developing five year plans for accelerating the use of solar energy technologies. In other recent research activities, supported by NSF, Mr. Freeman has explored problems in communication among scientists, engineers, decision-makers, and environmental activists engaged in energy problem-solving. He also tested a new set of techniques for improving access to numeric data in scientific and technical literature.

In his consulting activities, Mr. Freeman serves on the management board of the Denver Technological Innovation Center, an activity begun in 1974, which establishes technology transfer links among local government agencies, industrial firms, and academic institutions.

Mr. Freeman's recent consulting activities have included work for the United Nations Office of Science and Technology in the areas of technology transfer and assessment; for the United Nations Educational, Scientific and Cultural Organization on matters related to science and technology policy planning in the Third World; for the U.S. Environmental Protection Agency on environmental communication problems; and for the National Science Foundation in the areas of information science and technology transfer.

Before joining SRI in 1968, Mr. Freeman worked as an internal consultant for Eli Lilly and Company in Indianapolis, Indiana. At Lilly, he assisted in the development and evaluation of employee benefit programs, in-house communications, and consumer relations. Mr. Freeman has taught undergraduate and graduate courses at the University of Denver in organizational communications, interpersonal relations, and research methodology.

[illegible] Senior Research Mathematician, Associate Division Head

B.A., Mathematics, University of Denver
M.S., Mathematics, University of Denver
Ph.D., Mathematics Education, University of Denver

Dr. Dost's major research interests focus on innovations in training and staff utilization systems and evaluation with particular emphasis upon the role of technology. In addition, she is heavily involved in the application of experimental and statistical design in the behavioral and social sciences.

Dr. Dost has directed projects for the Navy and the Coast Guard to enhance staff recruitment and utilization, with special regard to training, job placement, and career progression. She has conducted a study for NASA to generate hypotheses for the combination of ways in which knowledgeable people transfer their skills to new job situations, and has just completed a study to evaluate projects that encourage women to select and prepare for careers in science and engineering.

She has also specialized in applying evaluation skills in the fields of law enforcement and judicial administration. She has performed a study of auto theft crimes and offenders for the Department of Justice in which recommendations were generated to stabilize thefts and to maximize recovery rates. She directed several studies for the Division of Criminal Justice including the evaluation of Colorado's criminal information and data access system. She is presently conducting a three-year project to evaluate the delivery of technical assistance services to the state courts, and is supervising a project to develop and test traffic adjudication alternatives in Denver for the Colorado Division of Highway Safety. Dr. Dost is particularly interested in the development and refinement of research methodologies, and has investigated the applicability of an alternative evaluation methodology for NIP.

Under several contracts for the Air Force Human Resources Laboratory, Dr. Dost has developed and examined new training materials, training aids and instructional strategies. Studies have included the development and evaluation of a prototype computer managed instructional system and a computer-based performance simulator for electronic troubleshooting. She is presently directing a grant to examine design issues for rural service delivery projects incorporating telecommunications technologies.

Since joining the Denver Research Institute in 1976 she has performed the mathematical modeling and numerical analysis for a number of engineering research applications. Her responsibilities have also included instruction of graduate students engaged in thesis research with emphasis on research design and behavioral statistics. Her previous experience includes Systems Engineering Instructor at IBM in New York and several years as an engineer at Martin Marietta Company in Denver. She is a member of several professional societies and has published numerous technical papers in this country and abroad. She is listed in the current editions of several national and international biographical volumes, and is a member of the Governor's Science Advisory Council.

[redacted]

[redacted]

[redacted]

EXHIBIT 2

LIST OF TELECOMMUNICATION POLICY WORK PERFORMED BY JAMES W. HART

1. Studies performed by HARTHUN, INC.:

a. "Broadband Communications in Rural Areas", Denver Research Institute, November, 1973 (OTP Contract). HARTHUN performed all the microwave technical and economic analyses.

b. "Utilization of Electronic Message Systems (EMS) Outside and Within the U.S. Postal Service", May 24, 1974 (OT Contract).

2. Studies performed while employed by GT/IWD in Boulder, Colorado. (PRE= Policy Research Estimate):

a. "An Initial Look at WANG Breakeven Data", PRE, June, 1974.

b. "A Survey of Non-Tariff Trade Barriers for Microwave Radio and Two-Way Radio Equipment", PRE, January, 1975.

c. "The Federal Telecommunications System - A Statutory Viewpoint", PRE, February, 1975 (Coauthored by Hart & Ewing).

d. "Value Added Network Services, Market Characteristics", PRE, May, 1974.

e. "Comparison of Long Haul Microwave and Cable Facility Costs of A.T.&T. Long Lines", PRE, August, 1975.

f. "Urban CATV Distribution Plant - Part I: Current Cost and Technology", PRE, April, 1975 (Coauthored by Hart, Gray, Miller, & Au).

g. "A.T.&T. Microwave and Cable Designations", PRE, June, 1975 (Coauthored by Hart & Quiter).

h. "Technical and Cost Factors in Low Power TV Transmitters and Translators", PRE, November, 1974.

i. "CATV Networking Costs", PRE, September, 1974.

j. "National Paging System - Part of the WANG Markets", PRE, April, 1974.

k. "GTI Contract on Phase III of Broadband Communications in Rural Areas - Microwave Relay Considerations", PRE, May, 1974.

l. "Frequency Assignments and Power Allowable for VHF/UHF Translators", PRE, January, 1976.

m. "Low Power TV Transmitter Reliability Available and Case Experience of Unattended Operation", PRE, December, 1974.

n. "Analysis of Cost Per Voice Equivalent Channel Per Mile-Month for Several Commercial Microwave Systems Versus Some of the A.T.&T. Rates", PRE, March, 1975.

o. "System Interconnection National Policy", Internal Use Document, January, 1976.

p. "Specialized Common Carrier National Policy", IWD, January, 1976.

q. "Telephone System Interconnect National Policy", IWD, December, 1975.

SUSANNE M. BRUYERE, Region X Rehabilitation Continuing Education Program

B.A., Psychology--Special Education, D'Youville College,
M.S.Ed, Rehabilitation Counseling, University of Southern California
M.A., Adult Education, Seattle University
Ph.D., Rehabilitation Counseling Psychology, University of Wisconsin

Professional Experience

1975-Present Resource & Research Specialist/Trainer/Assistant Professor
Region X Rehabilitation Continuing Education Program
Department of Rehabilitation
Seattle University
Seattle, Washington

1978 Chairperson, Certification Maintenance Committee

Regional Rehabilitation Continuing Education Programs

1978 Advisory Committee, Telecommunications Use in Rehabilitation Staff Training

Denver Research Institute
Denver University
Denver, Colorado

1977-Present Consulting Editor, Journal of Sexuality and Disability

1976 Professional Development Award for Study at the Cultural Learning Institute of East-West Center, Honolulu, Hawaii

1977 Rehabilitation Services Administration Fellowship for the International Research Program

1978 Placement Research Advisory Committee

Human Resources Center
Albertson, Long Island

1973-1975 Research and Teaching Assistant

Regional Rehabilitation Research Institute
University of Wisconsin-Madison, Madison, Wisconsin

1974 Research Assistant

Research Utilization Project
Division of Vocational Rehabilitation
State of Wisconsin
Madison, Wisconsin

Publications

Shaked, A., Bruyere, S., & Wright, G. The Assessment of Human Service Needs of Persons with Epilepsy and Cerebral Palsy. Madison, Wisconsin: University of Wisconsin, Regional Rehabilitation Research Institute, Series 3, Monograph XVIII, 1975.

Bruyere, S.M. Human Sexuality in Rehabilitation Medicine: A State-of-the-Art. In A. Shaked (Ed.), Human Sexuality in Rehabilitation Medicine. Williams & Wilkins, in progress.

Guest Editorial on Certification Maintenance for VRCs. Rehabilitation Counseling Bulletin (projected for) September 1978.

Bruyere, S.M. Telecommunications for Rebabilitation: The Future is Now. Awareness (Region III RRCEP Quarterly Newsletter), Spring, 1978.

Bruyere, S.M. The Role of Staff Development and Agency Administration in More Effective Job Placement. In D. Vandergoot (Ed.) Monograph on Placement Research. Albertson, Long Island: Human Resources Center (in progress).

Certification/Licensure

Certified Vocational Rehabilitation Counselor; Pupil Personnel Credential (California); Community College Counselor Credential (California); Community College Teacher Credential (Psychology) (California); Permanent Teaching Certificate for Elementary School and Special Education Classes (California and New York).

Professional Affiliations

American Personnel and Guidance Association (International Education Committee); American Psychological Association; American Rehabilitation Counselor Association; National Association of Rehabilitation Administration; National Council of Rehabilitation Educators; National Rehabilitation Association; National Rehabilitation Counselor Association; Northwest Humanistic Psychology Association; Puget Sound Chapter of National Rehabilitation Association.

HENRY H. WELCH, Assistant Director, CSRD/DRI;
Assistant Project Director, Regional Rehabilitation Research Institute;
Director, University Institute of Gerontology

B.A., Psychology, College of Wooster, Ohio, 1933
M.A., Industrial Psychology, Western Reserve University, 1934
Ph.D., Social Administration, Ohio State University, 1941

As assistant project director for the Regional Rehabilitation Research Institute program, Dr. Welch carries out principal research activities funded by the Rehabilitation Services Administration, OHD/DHEW, with special emphasis on the study of interagency linkages involving vocational rehabilitation.

Under a grant from the Administration on Aging, Dr. Welch directed the University's study of the appropriate structure, location, and administrative arrangements for an all-University center for activities related to aging. As a result, the Institute of Gerontology was established, and Dr. Welch was named director.

He has served as a specialist in research utilization, assisting in the retrieval of knowledge needed in program development and the initiation of innovative social services delivery methods. He provided consultation and technical assistance to units of the Region VIII Office, DHEW, and to human services agencies in the six states of Region VIII. Dr. Welch has been responsible for seminars on rural human services system design and impact evaluation, a national conference on "A Systems Approach to Manpower Utilization and Training," and workshops in interagency linkages. He has been director of the evaluation of a rural human services intergration project and has worked on the design and organization of various social planning and services programs.

Prior to his work with CSRD, Dr. Welch was for fourteen years executive director of the Denver Metropolitan Council for Community Service, a voluntary social welfare planning, coordination, and research agency for Metropolitan Denver; his activities included development of a five-year long-range planning and priorities program; assisting United

Fund in combining planning, budgeting, fund raising, and central services; organizing agencies for senior services, child care, volunteer bureau, homemaker services; coordination between various public and private agencies and organizations; conducting community needs studies; and providing consultation to public and private agencies, foundations, citizen groups, and individuals.

Dr. Welch also served for ten years as executive director of the Welfare Council of Delaware, and with the Welfare Council of Metropolitan Chicago, the American Red Cross, the Los Angeles Community Chest, the U.S. Department of Labor, and the U.S. Employment Service.

DALE L. GIBSON, President
Oklahoma City Junior College

VITA

Name: *Dale Lynn Gibson*

Age: *45*

Born: *December 4, 1932* *Jenks, Oklahoma*

Married: *Carol Dean Williams*

Children:

Scott Dale Gibson	*21*
Mark Carroll Gibson	*19*
Lynn Dean Gibson	*16*

EDUCATIONAL EXPERIENCES:

Attended public schools in Jenks, Oklahoma, grades 1-9
Salem, Illinois, grades 10-12

Graduated Jenks High School, Jenks, Oklahoma, 1950

Associate of Arts Degree from Coffeyville Jr. College,
Coffeyville, Kansas, 1952

Bachelor of Science Degree from Emporia State, Emporia, Kansas, 1957

Master of Science Degree from Emporia State, Emporia, Kansas, 1959

NDEA Institute, Oklahoma State University, Stillwater, Oklahoma, 1964

NDEA Institute, University of Minnesota, Minneapolis, Minnesota, 1965

Doctor of Education (Higher Education) from University of Tulsa,
Tulsa, Oklahoma, 1968

Dissertation
"A Study of Vocational Interest Maturity in a College Freshman Orientation Class"

PROFESSIONAL EXPERIENCES:

1957-60 *Leavenworth High School, Leavenworth, Kansas*
Journalism-English Teacher
Football-basketball coach

1960-62 *Owasso Public Schools, Owasso, Oklahoma*
Counselor
Basketball-baseball coach

1962-64 *Jenks Public Schools, Jenks, Oklahoma*
Director of Guidance and Counseling

1964-66 *Oklahoma State University, Stillwater, Oklahoma*
Assistant Dean of Men in Charge of Residence Halls

1966-68 *Panhandle State College, Goodwell, Oklahoma*
Dean of Students

1968-69 *Seward County Community College, Liberal, Kansas*
First Dean of Instruction

1969-74 *Seward County Community College, Liberal, Kansas*
President

1974 - Present *South Oklahoma City Junior College, Oklahoma City, Oklahoma*
President

MILITARY EXPERIENCE:

1953-55 *U.S. Army Engineer Research Development Laboratory*
Ft. Belvoir, Virginia

HONORS AND AWARDS:

Academic

Phi Delta Kappa
NDEA Fellowship, Oklahoma State
NDEA Fellowship, University of Minnesota
President, State of Oklahoma Personnel Guidance Association
Chairman of President's Council, State of Kansas
Legislative Chairman, Kansas Association of Community Colleges
Special Appointment to State Department of Education
Council of Presidents to work with:
1. *Master Planning Commission*
2. *Coordinating efforts with Higher Education Regents' Presidents*
3. *Coordinating Area Vocational Technical Association and Community College Association*

(Continued)

Liberal Chamber of Commerce Board of Directors
New college presidents' institute, UCLA, 1971
Selected to participate with twenty-one other community and junior college presidents from throughout the nation in the 1977 Presidents Forum sponsored by the Presidents Academy, American Association of Community and Junior Colleges.

PROFESSIONAL AFFILIATIONS:

President - Mid-Continent Community College Leadership Consortium

Director - South Oklahoma City Chamber of Commerce

Member, Board of Trustees - Hillcrest Osteopathic Hospital, Inc.

Past Director - Oklahoma City Beautiful

Member - Council of North Central Community and Junior College Task Force on "Role, Functions and Relationships of Area Vocational Schools, Technical Institutes, Community Junior College and other elements of Postsecondary Education"

Member - Rotary International

R E S U M E

ROBERT WEDGEWORTH

Address: 2626 North Lakeview, #4108, Chicago, Illinois, 60614

Birthdate: July 31, 1937, in Ennis, Texas

Marital Status: Married to Chung Kyun; daughter Cicely Veronica, 3 years old

Health: Excellent

Height: 6'2"

Weight: 195 pounds

I. EDUCATION

A. Wabash College, Crawfordsville, Indiana. AB 1959. Concentration in English and Spanish literature, French language.

B. University of Illinois, Champaign/Urbana. MS 1961. Library Service.

C. Further graduate work: Washington University, St. Louis, Missouri, Spanish literature (summer 1965); Rutgers, the State University of New Jersey, Library Service (1969-1972).

II. PREVIOUS EMPLOYMENT

A. Executive Director, American Library Association, Chicago, Illinois. 1972--. Chief Executive Officer of a 35,000-member educational association with approximately 250 staff members and an annual operating budget of close to $10 Million.

B. Assistant Professor, Library Service, Graduate School of Library Service, Rutgers, the State University of New Jersey. 1971-72. Courses taught: Introduction to Library Service, Building Library Collections, Planning Library Services.

C. Assistant Chief Order Librarian, Brown University, Providence, Rhode Island. 1966-69. Principal duties included administering the total University budget for library materials, specializing in the foreign book trade. Introduced library automation to the University Library. Pioneered use of blanket and approval orders as a means of controlled collections development.

D. Head Librarian, Meramec Community College, Kirkwood, Missouri. 1964-65. Developed library program and building program for the suburban campus of the Junior College District of St. Louis, St. Louis County. Responsibilities included the administration of all educational media resources for the campus and experimental design of library instruction program for students.

E. Acting Head Librarian, Park College, Parkville, Missouri. 1963-64.

F. Assistant Head Librarian, Park College, Parkville, Missouri. 1962-63. Hired to reorganize the technical processing system for the College library, including a divided catalog to facilitate use of a small catalog area. Maintained general policies during the following year as Acting Head Librarian.

G. Cataloger, Kansas City, Missouri, Public Library. 1961-62. Learned basic principles and procedures of Technical Services Department, including cataloging, classification, and acquisitions.

III. RELATED PROFESSIONAL ACTIVITIES

A. Member, "Library 21" exhibit staff, Seattle World's Fair, sponsored by the American Library Association. July-August 1962.

B. Consultant, Roger Williams College, Bristol, Rhode Island. 1969-70. Advised on basic organization of an undergraduate academic library program.

C. Council on Library Resources Fellow. June-July 1969. Surveyed Western European book trade with respect to blanket and approval orders.

D. Member, Biomedical Library Review Committee, National Library of Medicine. 1975-79.

E. Member, National Commission on New Technological Uses of Copyrighted Works (CONTU). 1975-78.

F. Chair, Library Advisory Group to the Library of Congress, 1976-77.

G. Member, Board of Visitors: Air University (1978-81); Pittsburgh University Graduate School of Library and Information Sciences (1977--).

H. Member, Advisory Council: Ohio College Library Center (1976-77); Princeton University Library (1977-81); Board of Advisors to Marquis Who's Who in America.

I. Member, Board of Directors: Public Service Satellite Consortium; American Association for the Advancement of the Humanities.

IV. AWARDS AND HONORS

A. Early entrance scholarship, Fisk University, Nashville, Tennessee. 1953. Declined.

B. All-state high school basketball player, Missouri. 1954-55.

C. Frank Hugh Sparks Award for Wabash Man of the Year. 1959.

D. U.S. Office of Education Graduate Fellowship. 1969-72.

E. Honorary Doctor of Literature, Park College, Parkville, Missouri. 1973.

V. BOOKS

A. Editor-in-Chief, ALA YEARBOOK. An annual survey of library activities, North America. (Chicago, American Library Association, 1976--).

B. Editor-in-Chief, ALA ENCYCLOPEDIA (in preparation). A world encyclopedia synthesizing the history and development of library and archival services on a descriptive as well as comparative basis. (Chicago, American Library Association).

VI. SELECTED LIST OF JOURNAL ARTICLES

A. "Jazz" (LIBRARY JOURNAL, vol. 88, no. 9, pp. 1830-31, 1 May 1963).

B. "Brown University Library Fund Accounting System" (JOURNAL OF LIBRARY AUTOMATION, vol. 1, no. 1, pp. 51-65, March 1968).

C. "Foreign Blanket Orders: Precedent and Practice" (LIBRARY RESOURCES AND TECHNICAL SERVICES, vol. 14, no. 2, pp. 258-68, Spring 1970).

D. "ALA CENTENNIAL" (IFLA JOURNAL, vol. 2, no. 2, pp. 124-27, 1976).

E. "Organizing Librarians: Three Options for ALA" (LIBRARY JOURNAL, vol. 101, no. 1, pp. 213-15, 1 January 1976).

F. "Libraries" (DICTIONARY OF AMERICAN HISTORY, Revised Edition, Charles Scribner's Sons, 1976, 7 vol.).

G. "Library" (WORLD BOOK ENCYCLOPEDIA, 1978 Edition, in preparation).

H. "Global Library Diplomacy: Building National Purpose for an International Mission" (AMERICAN LIBRARIES, vol. 9, no. 1, pp. 33-34, January 1978).

VII. SELECTED SPEECHES

A. "The ALA: Looking Ahead to '76 and Beyond", address to the ALA 94th Annual Conference, San Francisco, California, 2 July 1971.

B. "State of the Association" How to Live Happily Without Federal Support", address to the ALA Midwinter Meeting, Washington, D.C., 1 February 1977.

C. "Television, Books and Libraries", Mildred Pike Lecture, Sioux City Public Library, 100th anniversary celebration, 4 December 1977.

VIII. MEMBERSHIPS AND OTHER ACTIVITIES

A. Member, American Library Association

B. Member, American Society for Information Science

C. Life Subscriber, NAACP

D. Chicago American Issues Forum Committee, 1975-76

E. Consultant, WTTW-TV, Channel 11, Chicago, Illinois

F. Wabash College Alumni Board Member and President, Wabash Club of Chicago

G. Member, Arts Club of Chicago

H. Member, University Club of Chicago

I. Member, Newberry Library Associates, Chicago, Illinois

IV. INTERNATIONAL ACTIVITIES

A. Chair Pro Tem, United States National Committee for the UNESCO General Information Program, 1977--.

B. Advisor, U.S. State Department, to 1977 Intergovernmental Conference, on UNESCO General Information Program.

C. ALA representative to International Federation of Library Associations and Institutions Annual Council meetings, 1973--

D. Leader, State Department delegation to the Soviet Union, November 1976.

RW:bt
03/02/78

[redacted]

Director of Engineering
Public Service Satellite Consortium

Dell Ogden, Director of Engineering for the Public Service Satellite Consortium, is responsible for all engineering activities on PSSC contracts, including management of personnel and facilities (Network Coordination Center, Denver Uplink Terminal, microwave connection equipment); coordination of engineering functions; development of budgets; analysis of the user information system and planning of the operational system for facilities assigned to engineering functions. Before joining the PSSC, Ogden was Director of Broadcast and Engineering for the Satellite Technology Demonstration, Federation of Rocky Mountain States, responsible for the engineering design and management of the total ATS-6/HET communications system and for its installation, operation and maintenance. Prior to joining the STD, he served for 12 years as Associate Director of Radio and Television Services at the University of Utah, where he was responsible for the engineering design, operation and management of the campus closed circuit television system, the University Hospital television system, KUED television station, KUED FM radio station and a state-wide translator network for the state of Utah.

Ogden has over 30 years experience in engineering, installation and operation of broadcast stations, cable systems, micro-wave relay systems, and repeater systems. He has performed consulting work for several universities and other agencies in both the public and private sector, as well as maintaining his own communications consultant service for three years. He is credited with numerous publications, including authorship of Utah's Telecommunications Plan (1970), various articles for Broadcast & Engineering magazine and the NAEB publication on closed circuit television design and operation, and production of a film for the U.S. Office of Education on overhead television teaching systems.

6/77

[redacted]
Director of Service Development
Public Service Satellite Consortium

Laura A. Brandford, Director of Service Development for the Public Service Satellite Consortium, is responsible for identifying and informing potential users of communication satellites about the role and responsibility of PSSC in planning and implementing experiments. Dr. Brandford assists PSSC members and users in assessing needs, interests, and user requirements, identifying resources and constraints, and formulating plans to respond to needs.

Dr. Brandford received his B.A. in Business Administration from the College of Santa Fe in 1961, his M.A. in Mental Retardation from the University of Northern Colorado in 1966, and his Ed.D. in Special Education from the University of Northern Colorado in 1968.

Prior to joining PSSC, Dr. Brandford served as the Director of Utilization for the Satellite Technology Demonstration, Federation of Rocky Mountain States. Primary responsibilities included the development, implementation and coordination of field services for the STD. From 1968 to 1970 he was a professor of education at the University of New Mexico where responsibilities included the development, implementation and administration of a teacher and counselor training program in Special Education at the undergraduate and graduate levels.

Publications include "Communication in Seven League Boots," Exceptional Children; "Impact of Television on Children and Youth in Geographically Isolated Areas," The Federal Role in Funding Children's Television Programming, Institute for Communication Research, Indiana University; "Delivering Satellite Services," Proceedings of the NIMI Conference on Communication Satellites for Health/Education Applications; "Technological Innovation and Educational Practice: A Discussion of the Future," STD Technical Report; "Communications Satellites Serving Special People -- A Realization," Proceedings of the First International Learning Technology Congress and Exposition, Society for Applied Learning Technology.

APPENDIX A

PROFILES OF THE FIVE USER COMMUNITIES

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VOCATIONAL REHABILITATION

USER COMMUNITY I--PROFILE

A. Lead Institution

Region X Rehabilitation Continuing Education Program
Seattle University
Seattle, WA 98122

Representative: Dr. Susanne M. Bruyere
206/626-5783

B. Topic Area

Staff Training--State Vocational Rehabilitation Agencies

C. Where

Initially: Region X

Later: Region VIII, Region VI, nationwide

D. Need

Rapid growth in the vocational rehabilitation (VR) system has made it increasingly difficult to keep its over 50,000 personnel, dispersed in hundreds of local offices, continually apprised of changes in federal guidelines which often impact agency policy and client service delivery. Simultaneously, the knowledge explosion in technical and health related areas has added emphasis to the importance of continuing education to keep field practitioners apprised of new information which may improve client services. In the face of the increasing amount of information to be disseminated to this widely dispersed trainee population, trainers of VR personnel must now explore innovative approaches to delivery of training and dissemination of information to field staff.

Regional Rehabilitation Continuing Education Programs (RRCEPs) were created and funded by RSA in 1974 and are located in each of the ten federal regions to aid state rehabilitation and blind agencies in the fulfillment of the mandate to keep rehabilitation personnel up to date as to changes in legislation and innovations in methodologies which may impact the quality or nature of services to VR clients. Nationally, the 80 state rehabilitation agencies are staffed by some 50,000 personnel, yet among the 14 RRCEPs, there are less than 50 trainers available. As an example, the Region X RRCEP at Seattle University has three trainers to serve more than 1,000 individuals working in state agencies in Washington, Oregon, Idaho and Alaska. It is this region in which the DRI plans to begin working. Enthusiasm for technology-based delivery systems is high and the VR training interests in the region are already organized.

E. Financial Base

State agency VR budgets total $839,000,000 in 1978. Budgets for all of the Regional Rehabilitation Continuing Education Programs total $2,000,000.

F. Related Work in Progress and/or Proposed

Current DRI project funded by RSA, to examine feasibility of delivering state VR agency staff training using telecommunications.

Region X RRCEP proposal for a regional telecommunications system.

Region X RRCEP/DRI proposal for a national program to train VR trainers in the use of technology-based communications systems.

Region X Consortium of all VR training interests.

RSA national priorities for telecommunications uses.

High interest in telecommunications use in Region VI.

G. Extended Possibilities

Considerable interest in training for VR staffs working in private settings, in client services delivery and for administrative uses by state agencies.

AGING

USER COMMUNITY II--PROFILE

A. Lead Institution

Institute of Gerontology
University of Denver
Denver, CO 80208

Representative: Dr. Henry Welch, Director
303/753-3652

B. Topic Area

Training for persons working with the aging

C. Where

Initially: Colorado

Later: San Diego, Rocky Mountain Region

D. Need

In 1976, there were almost 22 million persons aged 65 and over residing in the United States. This number is expected to increase to at least 30 million by the year 2000. Federal agency awareness of the need to plan for the elderly has also increased. Additional awareness and funding produce new programs, services and facilities for which adequately prepared personnel are critically needed.

Two approaches to training are needed. One is for young people just selecting career paths and ready for entry to two-year or four-year college programs and the other is for persons already working with the aging who received their training prior to the time when specialization in gerontology was possible. The latter group also includes the elderly themselves or other community-based persons who would like active

involvement with gerontology-related activities--as employees, volunteers, or informed citizens.

At the University of Denver, the Institute of Gerontology is a University-wide, multidisciplinary organization and a budgetary unit of the Office of Academic Affairs. It was initiated with the help of a planning grant from the Administration on Aging and with a University venture fund grant. The Institute responds to needs for undergraduate and graduate career education, certificate programs for mid-career persons and short-term training.

E. Financial Base

Budgetary support for the Institute is about $175,000 per year. It seeks additional funds from federal, regional and state sponsors and it charges (through the University) tuition for its courses and programs.

F. Related Work in Progress and/or Proposed

A multidisciplinary training grant from the Administration on Aging (Title IV-A) is supporting the development of short-term training for mid-career persons in the field and the development of a certificate program for mid-career persons. The grant is renewable and the second year proposal will include plans for a regional resource center on aging. The Center would collect materials and information about non-medical aspects of aging in support of curriculum development and delivery of training.

Development and national distribution of a series of video programs on public library services to the aging has already been completed.

Participation in a forthcoming national professional meeting on the topic of using communications technology in aging and developing

activities in the San Diego area are additional signs that the field of aging is a promising participant in the satellite-based delivery project.

G. Extended Possibilities

University courses and special programs for and by the aging.

INDIAN COMMUNITY COLLEGES

USER COMMUNITY III--PROFILE

A. Lead Institution

American Indian Higher Education Consortium (AIHEC)
1626 High Street
Denver, CO 80218

Representative: Leroy Clifford, Executive Director
303/321-5909

B. Topic

Community College courses, special programs.

C. Where

Initially: South Dakota, Denver

Later: Other member college sites in North Dakota, Nebraska, California and Arizona

D. Need

The American Indian Higher Education Consortium (AIHEC) was organized in 1972. It provides a variety of technical assistance services to a network of ten Indian-controlled community college centers located on Indian reservations in five states. There are about 2,000 students enrolled in these colleges--they range in age from 17-65.

Member colleges offer many special programs including study for the GED, special reading instruction and a variety of continuing education programs, some colleges have arrangements with four-year institutions to provide opportunity for bachelor's degree programs such as in nursing. There is a need to develop new programs and to share existing programs. Also needed is a way to increase the opportunities for Native American instructors to receive credentials required for teaching.

E. Financial Base

Some member colleges receive operational support from the Bureau of Indian Affairs, some from their state higher education agencies. Support from Title III of the Higher Education Act (Basic Institutional Development Program) has also been available.

Several funding programs are available especially for Native Americans. These include: Employment Assistance for Adult Indians and Vocational Training for Adult Indians. Member colleges have grant seeking capabilities and AIHEC as a consortium may seek funds on behalf of its members.

F. Related Work in Progress and/or Proposed

NASA will provide a satellite demonstration to the Crow Reservation in Montana (and to one or two additional reservations) in April 1978. Following the demonstrations, AIHEC members will be invited to a meeting to discuss possible alternatives for use of satellite-based systems. Two member colleges (at Pine Ridge and Rosebud, South Dakota) have already been visited by the DRI project director and are ready to participate in an NIE/DRI project. Already in place is the Native American Public Broadcasting Consortium. This group, headquartered at the Nebraska ETV center in Lincoln is committed to establishing a national videotape and film library of program materials by, for and about Native Americans.

Several federal funding programs are available to individual member colleges and to AIHEC acting on behalf of its members. The Bureau of Indian Affairs has also expressed some special interest in the use of telecommunications to deliver educational services for and by Native Americans.

G. Extended Possibilities

External degree programs, sharing of Indian culture with major colleges and universities all over the U.S., development of a Native American Center for the study of communications and instructional design.

OTHER COMMUNITY IV--PROFILE

A. Lead Institution

South Oklahoma City Junior College
7777 South May
Oklahoma City, OK 73159

Representative: Dr. Dale Gibson, President
405-682-1611

B. Topic Area

Short courses and special programs

C. Where

Initially: Oklahoma City, Hastings (NE), Cheyenne, Denver

Later: 8 other sites in Nebraska, Kansas, Oklahoma, Wyoming, Illinois and Wisconsin; then nationally

D. Need

Two-year colleges enroll about 36 percent of the post-secondary students involved in higher education. This percentage has been increasing, in part, because the community colleges have been innovative in areas of curriculum and instruction. Their responsiveness to local needs resulted in a total community education (non-credit activities) enrollment of about 3,300,000 in 1976.

Some of the special communities whose needs are being addressed are Native Americans, the elderly, Blacks, Spanish-Speaking and the industrial sector.

The use of computer media, television and individually paced instruction and the availability of courses and programs at multiple sites and times are among the special responses being made by two-year colleges. In 1976-77, South Oklahoma City Junior College offered a wide variety of community-based programs which reached about 10,000 persons. This was a 78 percent increase over the previous year.

E. Financial Base

Typically state and local (mill levy) funds and tuition receipts. Federal funds are often sought for special projects and programs.

F. Related Work in Progress and/or Proposed

At South Oklahoma City Junior College, ongoing use is being made of the statewide talkback television system with its 27 college-based sites. This system is presently being used to train penal officers at all of the state's correctional institutions. DOCJC has a completely equipped video production facility.

DOCJC has sought and received funds from a variety of federal sources including OSHA and FIPSE and from federal programs administered by the State Higher Education System. This aggressive fund-seeking activity is likely to continue.

G. Extended Possibilities

Participation by 11 community colleges in six states which are joined in a Mid-Continent Leadership Consortium, their

[redacted] of the satellite-delivery project [redacted] the Associ-
ation Association of Community and Junior Colleges for [redacted]
programming.

[redacted]

[redacted]

A. Lead Institution

[redacted]

B. Topic area

Continuing Education for Library Staffs

C. Phase

Initiation: Oregon State Library, Washington State Library, Oklahoma State Library

Later: Nine selection with advice from Advisory Committee

D. Need

There is considerable evidence to show that continuing education for library information science and media personnel is needed and is currently of high national priority. The National Commission on Library and Information Science, the Continuing Library Education Network and Exchange and the American Library Association are all committed to continuing education as a high priority.

The Bureau of Labor Statistics projects that by 1990, there will be 141,000 librarians and 171,000 non-professional library personnel employed in the United States. Recognizing the severity of the problem, the American Library Association is now taking steps to become the focal point for library continuing education.

E. Financial Base

ALA membership dues, tuition for courses and programs, state library agency CE funds, USOE library training and institutes funds, and funds from foundations.

F. Related Work in Progress and/or Proposed

ALA has recently participated in a NASA satellite demonstration in which a two-hour teleconference about the new U.S. Copyright Law was broadcast to 15 sites in the southern U.S. Some 1,300 persons participated.

ALA is a member of the Public Service Satellite Consortium (as is DRI) and ALA's Executive Director serves on the Executive Board of PSSC. The Director of ALA's Washington office has recently been elected President of the Joint Council on Educational Telecommunications.

ALA has submitted a proposal to a foundation for support of a major CE development effort. DRI has submitted a proposal to USOE to study the feasibility of forming a clearinghouse for library CE and staff development software. The DRI proposal assumes libraries as major users of telecommunications, especially for continuing education.

The Continuing Library Education Network and Exchange (CLENE) has recently been funded to training state library agency personnel involved with continuing education. CLENE seeks additional funding to expand its activities and is looking to satellite based delivery systems as a means of reaching more people more cost-effectively.

DRI has already been involved with the development of satellite-deliverable video programs for in-service training of library staffs. Since 1974, 21 such programs have been developed and placed in national distribution.

G. Extended Possibilities

Special events such as the forthcoming White House Conference on Library and Information Services and the dedication of the Madison Building of the Library of Congress can be broadcast. Administrative teleconferences, materials distribution and library services to special groups (such as the handicapped and the aged) will be of nearly immediate interest.

APPENDIX B

LETTERS OF COMMITMENT

Public Service Satellite Consortium

March 20, 1978

Dr. Ruth Katz
Industrial Economics Division
Denver Research Institute
University of Denver
University Park
Denver, Colorado 80208

Dear Dr. Katz:

The Public Service Satellite Consortium (PSSC) would be pleased to provide technical assistance to the Denver Research Institute (DRI) in support of its project on Educational Applications of Satellites.

PSSC believes the aggregation of users as described in your proposal is the most realistic approach to public service use of telecommunications. The aggregation of resources and requirements, cooperative planning and scheduling, and shared use of facilities will be the key to effective use of telecommunications by public service users.

As per verbal agreement, PSSC assistance will include:

- Review and update the needs of DRI with its requirements for satellite service.
- Evaluate available satellite telecommunication systems which can meet DRI service delivery requirements.
- Address likely technical and cost elements of those systems in effecting DRI's access to economical end-to-end service.
- Provide access and technical support for use of satellite ground facilities in Denver.
- Examine earth station configuration for use of experimental and commercial satellites for DRI target populations.
- Examine terrestrial systems which can extend distribution to DRI target populations.

PRINCIPAL OFFICE:
4040 SORRENTO VALLEY BOULEVARD
SAN DIEGO, CALIFORNIA 92121
714-452-1140

2480 WEST 26th AVENUE
DENVER, COLORADO 80211
303-458-7273

1126 16th STREET, N.W.
WASHINGTON, D.C. 20036
202-659-2277

- Coordinate arrangements with common carriers for transmission on commercial satellite systems.

- Coordinate arrangements for extended terrestrial distribution through the PTSS, ITFS, CATV, MDS, and others.

- Assist in evaluating the acceptance and effectiveness of alternative modes of service delivery.

- Prepare appropriate reports which provide the above information in conjunction with operational recommendations and the associated costs.

Financial arrangements for PSSC assistance will be on a cost reimbursable basis as reflected in the proposal budget.

We look forward to working with DRI.

Sincerely,

John P. Witherspoon
President

OREGON STATE SYSTEM OF HIGHER EDUCATION
OFFICE OF EDUCATIONAL SYSTEMS
P.O. Box 3175
[illegible]

OFFICE OF THE VICE CHANCELLOR

29 March 1978

TELEPHONE
[illegible]

Dr. Ruth Katz
Knowledge Utilization Program
Denver Research Institute
2135 East Wesley
Denver, Colorado 80208

Dear Dr. Katz:

I am writing to advise you of the continuing interest of the Oregon State System of Higher Education in participating in satellite communications projects. As I have indicated to you the shortage in time allocated for detailed planning has precluded our submission to you of a detailed proposal for the NIE project with which you are currently involved.

As you are aware from your visit here, the Oregon State System is unique in its organization and capabilities to deliver educational services throughout the State. We are, however, deficient in our ability to reach areas outside of the highly populated Willamette Valley and look toward experimentation with sophisticated communications capability to meet that need. As noted in your meeting here, both LaGrande and Coos Bay are, therefore, potential satellite terminal sites.

The State System will be pleased to work with you if a continuation of your efforts is funded. In the interim, we are engaging in some preliminary internal study efforts to ascertain our current needs and the most cost beneficial methods to address them.

Thank you for your interest in the Oregon State System of Higher Education's communication needs. I look forward to working with you and DRI in the future.

Sincerely,

E. Rex Kruger

ERK:rnf

REHABILITATION CONTINUING EDUCATION PROGRAM

Seattle University

SEATTLE, WASHINGTON 98122
TELEPHONE (206) 626-5783

March 21, 1978

Ruth Katz, Ph.D.
Research Scientist
Denver Research Institute
Department of Industrial Economics
University of Denver
Denver, Colorado 80208

Dear Ruth:

This letter comes as a formal confirmation of my support for your efforts to seek a National Institute of Education grant to study ways to facilitate continuing education using telecommunications technology.

As a trainer and resource/research specialist for the Region X Rehabilitation Continuing Education Program (RRCEP X) at Seattle University, I can certainly verify the need to explore innovative ways to provide continuing education to rehabilitation personnel. The growth of the Federal-State VR agency system, dispersed across the United States, the knowledge explosion in the health and technical areas, and the advent of a certification maintenance process in the field of vocation rehabilitation, demands that rehabilitation trainers explore new ways to meet the continuing education needs of rehabilitation personnel. Telecommunications technology offers the field of rehabilitation such new approaches, and therefore should be explored in greater depth.

Current trends in the field of vocational rehabilitation indicate increasing interest in exploring the use of telecommunications technology in rehabilitation training, agency administration, and client service delivery. One of the national short-term training priorities determined by the Rehabilitation Services Administration for FY 1978 is in the use of telecommunication in rehabilitation training. Furthermore, in the proposed extension of the Rehabilitation Act of 1973 (Senate Bill 2600) two sections are included which would strengthen emphasis on the importance of the use of telecommunications technology in rehabilitation staff development, agency administration, and client service delivery. It is timely, indeed, that the Denver Research Institute is proposing a project which would help trainers in the field of vocational rehabilitation to become knowledgable of ways to incorporate telecommunications technology into training delivery.

Training efforts in rehabilitation are structured regionally, and therefore appear to be consistent with the concept which you envision, where the use of telecommunications technology in continuing education would be greatly facilitated by user-sharing. There are 14 Regional Rehabilitation Continuing Education Programs, such as the one located at Seattle University. In addition, there are a vareity of other training efforts provided by rehabilitation

research and training centers, and rehabilitation counselor education programs. In Region X an effort has been made to coordinate these efforts by the establishment of a Regional Training Consortium. Telecommunications technology, such as teleconferencing, would provide an added way to facilitate greater communication and cooperation between these training interests.

RRCEP X has submitted two grant proposals to the Rehabilitation Services Administration for FY 1978 relating to telecommunications use in training. One is an application for a national short-term training grant, done in cooperation with the Denver Research Institute, to develop materials and implement a training program for rehabilitation trainers on the use of telecommunications in training. The second application is an Experimental and Innovative Training Grant which, if funded, would support a one to three year project to develop a regionalized planning approach in the use of telecommunications technology in rehabilitation training in Region X.

The need and the interest to explore the use of telecommunications technology in rehabilitation staff development is great. The project proposed by the Denver Research Institute would obviously be most useful in providing an overall structure for several current efforts along this line in the field of rehabilitation. I would like to express my support of your proposed effort, and my interest to work cooperatively with the Denver Research Institute in the future, should this grant be approved.

Sincerely,

Susanne M. Bruyere

Susanne M. Bruyere, Ph.D.
Resource & Research Specialists
Region X RCEP

SMB:jps

UNIVERSITY OF DENVER
[redacted]
[redacted]
[redacted] 2310

27 March 1970

Dr. Ruth M. Kats
University of Denver
Denver Research Institute/Industrial Economics
2135 E. Wesley
Denver, Colorado 80210

Dear Dr. Kats:

We are very pleased to join with you in presenting a plan to the National Institute of Education for involving five user communities in satellite-delivered continuing education programs. During the four-year period of the plan, the Institute of Gerontology will be in a period of growth in which the scope and depth of its programs will be increasing. We have, as you know, a major commitment to developing short-term training programs and a certificate program in aging studies for mid-career professionals and paraprofessionals who work with the aging. There is no question about the need for such programs in Colorado and in the region--only about our ability to deliver the training to all of those who want and need it. I believe that gerontology institutes and degree programs all over the country share this same problem.

With our Multidisciplinary Career Training Grant from the Administration on Aging, and with our new grant from the National Council on Aging in support of a community services training center in aging, we are well on our way to developing training content. The problem, of course, is to find a cost effective way to deliver this training. The NCOA grant is a case in point. Seven other similar projects have been funded in other parts of the country. All eight are expected to communicate with each other and to share successful programs. We presently have only the traditional means of doing so. Satellite-based delivery systems appear to be an attractive option, but we would not be thinking about this option without the availability of a management and technical support organization such as that described in your plan.

THE UNIVERSITY OF DENVER IS AN AFFIRMATIVE ACTION INSTITUTION

From working with you over the past few years, I have become increasingly interested in the roles of media and communications technologies in instructional delivery. I also understand that cost effective use of these may depend on aggregation of large numbers of users and on the sharing of facilities and programs. This seems reasonable enough, and I think the Institute of Gerontology can benefit from such sharing.

We look forward to joining with you in the WIE project. I understand that a letter of agreement between DRI and the Institute of Gerontology will be signed upon award of contract to DRI and that allocation of funds to us will occur at that time.

Sincerely,

Henry W. Welch, Ph.D.
Director

HWW/ts

Oglala Sioux Community College
Lakota Higher Education Center

P. O. BOX 490
PINE RIDGE, SOUTH DAKOTA 57770
TELEPHONE (605) 867-5512

March 17, 1999

Mark Gehl
Industrial Extension Division
University of Denver
University Park
Denver, Colorado 80208

Dear Mr. Gehl:

We are looking forward to working with you on the educational tele-communications project.

In this letter, we would like to utilize this project to help us with continuing education for our library staff and for use with our Nursing, Agriculture and Home Economics extension courses. We will be building one science laboratory in Pine Ridge next year and we plan, with your help, to build in the hardware necessary for linking the labs to our sister remote center, across the reservation. We also plan to use the system for staff development and upgrade in other educational areas.

We can definitely commit ourselves to providing part of the equipment needed and a salary for someone to work on the project.

Thank you for including us.

Sincerely,

Gerald Gipp, Ph.D.
Academic Vice-President

Budget:

Salaries	$31,000.00
+ 23% Fringe Benefits	7,320.00
Telephone	300.00
Secretarial Services (1/5 + 7200)	1,440.00
Office Space ($320/MO + 12 MO)	3,840.00
Travel to Denver (.33 + 3000 Miles)	990.00
Total	$44,340.00

JG:mb

[illegible]

[illegible]

South Oklahoma City
Junior College

[illegible]

[illegible]

[illegible]

AMERICAN LIBRARY ASSOCIATION
50 EAST HURON STREET · CHICAGO, ILLINOIS 60611 · (312) 944-6780

March 27, 1978

Dr. Ruth Katz
Denver Research Institute
University of Denver
University Park
Denver, CO 80208

Dear Ruth:

We are pleased to know that the Denver Research Institute is pursuing the "Five Communities Project" in order to test satellite-based delivery of continuing education programs. You are aware that the American Library Association recently conducted an experiment in satellite-based delivery of a continuing education program on the new copyright law which went into effect on 1 January 1978. The success of this experiment conducted with the cooperation of NASA and the Maryland Center for Public Broadcasting was encouraging and therefore we strongly support further efforts with the use of this technology.

ALA will provide whatever assistance we can in order to assure that your program will provide us with additional information for the broad-based continuing education program which we are in the process of planning for the library and information science field.

Sincerely yours,

Robert Wedgeworth

Robert Wedgeworth
Executive Director

RW:bt
enclosure

CLENE
CONTINUING LIBRARY EDUCATION NETWORK AND EXCHANGE
620 Michigan Avenue, N.E.
Washington, D.C. 20064
(202) 635-5875

The basic missions of CLENE are: (1) to provide equal access to continuing education opportunities, available in sufficient quantity and quality over a substantial period of time to ensure library and information science personnel and organizations the competency to deliver quality library and information services to all; (2) to create an awareness and a sense of need for continuing education of library personnel on the part of employers and individuals as a means of responding to societal and technological change.

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March 22, 1978

Dr. Ruth Katz
Denver Research Institute
University of Denver
University Park, Denver, Colorado 80208

Dear Ruth:

I certainly appreciated the opportunity to talk with you about your exciting projects in your room during the ALA Midwinter in Chicago. As our CLENE meetings were over, I did not have an opportunity there to talk with Board members at that meeting. Last night Ruth Patrick was here, so, as former President of CLENE, I thought her reactions might be helpful to you--if they reach you in time.

We have been working with the state library agencies. As a matter of fact we have just received (but not yet announced) a $44,000 to hold a year long extended institute for state library agency personnel involved in continuing education. This will be the second such funding we have received for training state library agency personnel. And whether we have funding for institutes or not, we try to work with state agencies and supply them with information and services which they can use, that are within the scope of our mission and financial capacity.

This means that we have developed the state library agencies as a pivotal block which would be a market for your satellite-delivered educational programs. State library agency personnel are in need of training. The current study that Ruth has been working on for HEW concludes that state library agency personnel need more training in such areas as needs assessment, evaluation, marketing, interpersonal relationships, innovative change, and many other areas. A recent study by COSLA also indicates that more training is needed in these and similar areas.

On an experimental basis we see that satellite education/training materials would provide a continuous mechanism for state agencies to train their own staff. As we discussed it, we postulated that we had the people network and mechanisms and experience in home study, and you, with your program have the technological know-how.

State library agencies have LSCA money for training which could be used toward the start-up of the program and after four years, if the value were demonstrated, the program could become self-supporting as individuals and libraries see the benefits that could be derived, and would be willing to pay for themselves for the training received.

CLENE and DRI with its technological ability could be the pivotal change agents through a combination of research and demonstration to be a real force for bringing change to the 50 states. The states have some discretionary money with which to experiment in their LSCA funds and once programs are successfully demonstrated, they will be convinced that the value is so great that they will be willing to pay for it out of their own local budgets.

Such training would eliminate the need for travel money, which many states report to us makes it impossible for them to send people out of their states to meetings and, it is even getting to the point that even if they pay their own expences, they are being very strict about giving them time to leave their states. For those who wanted the advantages of the group interaction, states could organize ways for people to receive the programs at centers where people could congregate to study. A consortium made up of state library agency personnel, professional association leaders, and library education, could have the responsibility for planning in each state.

As we discussed it informally last night, it would seem that CLENE could help you build a feeder mechanism which would involve the best of the communication satellite training and the best of the potential within the CLENE framework. For those who, for any reason, might not prefer the utilization of a satellite delivery system, we could use the system to push home study materials which also have the capability of reaching every individual anywhere.

We saw a parallel with the way the OCLC had built a technological network that CLENE could help in your project in building a human training resources network, linking all libraries, trainers, and practitioners together, this would work toward implementing the national network and the NCLIS objective #4 of training personnel to carry forward with the national plan.

Obviously, these are just quick ideas, off the tops of our thinking, but we did want to get word to you before your deadline, that we see that CLENE could indeed be helpful in your project and would like to cooperate. For your amusement, Ruth suggested the acronym DRI-CLENE.

Cordially, and with all best wishes in your pioneering work in satellite-based delivery systems.

Elizabeth W. Stone
Executive Director

cc: Ruth Patrick

PS: Sorry this is so late. es

SAN DIEGO STATE UNIVERSITY
SAN DIEGO, CALIFORNIA 92182

School of Social Work

March 13, 1978

Dr. Ruth Katz
Denver Research Institute
University of Denver
Denver, Colo. 80208

Dear Dr. Katz.

As you know, the Western Gerontological Society Annual Meeting is being held in Tucson, Arizona from April 9-12, 1978. Over 3,000 participants including educators, older adults, researchers, policy makers and service providers are expected to attend, making it the largest and most comprehensive meeting in aging in the country.

On Wednesday, April 12, from 8:00 a.m. to 10:00 a.m., I will be coordinating a workshop entitled "Innovative Uses of Communications Technology in Aging". The workshop is designed to demonstrate application of electronic technology to serving informational, educational, interpersonal, and social service needs of older adults. It is geared for administrators/program developers in social service and educational programs, libraries and governmental agencies as well as for older adults themselves.

I am especially delighted to invite you to share your project with us at this meeting. I have no doubt that it will be of tremendous interest to the attendees, and an excellent opportunity for you to reach many people in the gerontological community from all over the United States.

In addition to your presentation, I have invited Ben Park of the Alternate Media Center to discuss the interactive T.V. experiment in Reading, Pennsylvania; Dr. William Arnold of Arizona State University to demonstrate a CB radio project he has started and I will be doing a short demonstration on PACE (Public Access Cable Television by and for Elders) our project here in San Diego. I've attached our brochure and newsletter for your information.

Since we only have two hours for the entire workshop, I estimate each presentation taking twenty-five minutes or less. This will allow time for audience participation and a five-minute evaluation at the end. I would like to keep the session fairly informal with the hope of generating lots of interaction among all the participants. In addition to the four projects being presented, I hope to have brochures and printed material on display of other innovative programs around the country. If you have any suggestions,

please send me the name and address of a contact person, so I can invite them to send materials.

Again, I'm thrilled to be able to invite you to Tucson and am looking forward to seeing you.

Warmly,

Kathleen Kenny

Kathleen E. Kenny

KK:stf

Encl: PACE Brochure & Newsletter
Article on Berks Cable

IE 7863/G49

TO
Technological Applications Division
National Institute of Education

Contract 400-77-0109

Satellite-Based Delivery of Continuing Education and Training Programs in Five User Communities

REPORT II: FOUR YEAR BUDGET

Part 7

Ruth M. Katz
James E. Freeman

Denver Research Institute
University of Denver
Colorado Seminary
Denver, Colorado 80208

March 1978

PART 7. BUDGET

The total budget for this four-year plan is 3.112 million 1978 dollars, of which the National Institute of Education is requested to provide $1,061.2 thousand (approximately 34 percent of the total funding).

Exhibit 7.1 presents a detailed breakdown of major cost estimates for each of the four years of funding requested from NIE.

Exhibit 7.2 indicates how costs will be shared between NIE and other funding sources for each of the four years. Cost-sharing by participating institutions will be based principally on three factors: (1) tuition for courses taken or programs attended; (2) portions of operational budgets currently committed to traditionally delivered instruction; and (3) fund-raising from sources other than NIE.

Exhibit 7.3 summarizes the sources and percentages of cost-sharing on the project, with NIE's portion ranging from a high of 85 percent in year one to a low of 11 percent in year four.

Greater detail on each and all of these cost estimates, including the assumptions made in such categories as subcontracting and travel, is available from DRI upon request.

Given the obvious difficulty of forecasting specific events on this project beyond its first year, the estimates for years two through four are considered to be reasonable, but subject to modification as conditions warrant. Subsequent plans for years two-four will reflect necessary modifications.

EXHIBIT 7.1. DETAILED BUDGET ($ x 000)* FOR NIE-REQUESTED SUPPORT

ITEM	1	2	3	4	SUBTOTALS	TOTALS
1. Personnel						
a. Project Director	$13.5	$16.2	$10.8	$10.8	$51.3	
b. Assoc. Proj. Director	10.8	10.8	8.1	8.1	37.8	
c. Other Senior Assoc.	9.3	6.2	6.2	6.2	27.9	
d. Other Professionals	17.6	17.6	8.8	8.8	52.8	
e. Secretarial	14.0	14.0	10.0	6.0	44.0	
SUBTOTALS	65.2	64.8	43.9	39.9		$213.8
2. Reserve (16% of "1")	10.4	10.4	7.0	6.4		34.2
3. Fringe (19% of 1 & 2)	14.4	14.3	9.7	8.8		47.2
4. Travel	17.1	17.1	17.1	17.1		68.4
5. Supplies & Expenses (inc. phone, postage)	4.8	4.5	4.5	4.5		18.3
6. Subcontractors and Consultants (see Exhibit 7.2)	89.0	172.0	72.0	26.0		359.0
7. Evaluation Subcontract	15.0	30.0	30.0	15.0		90.0
8. TOTAL DIRECT COSTS	200.9	283.1	154.2	102.7		740.9
9. Indirect Costs (78% of 1, 2 and 3)	70.2	69.8	47.3	43.0		230.3
10. TOTAL ESTIMATED COST	$286.1	$382.9	$231.5	$160.7		$1,061.2

*1978 dollars are assumed. Inflation thus would increase subsequent year estimates.

EXHIBIT 7.2. COST-SHARING BETWEEN
NIE AND OTHER SOURCES ($ x 000)* on SUBCONTRACTS

ITEM	YEAR 1	YEAR 2	YEAR 3	YEAR 4	TOTALS
	NIE/Other	NIE/Other	NIE/Other	NIE/Other	NIE/Other
A. General Support					
1. Lead institutions	$20/3	$20/7	$20/20	$20/50	$80/80
B. Special Support					
1. Other community colleges	24/22	10/20	--/150	--/300	34/492
2. Voc. Rehab.	12/2	20/20	--/60	--/200	32/282
3. Aging	--/--	24/12	--/50	--/100	24/162
4. Indian community colleges	--/5	24/20	20/40	--/100	44/165
5. Libraries	12/2	12/40	--/160	--/250	24/452
C. Consultant Support					
1. James W. Hart	5/--	5/--	2/--	2/--	14/--
2. Others as needed	2/--	2/--	2/--	2/--	8/--
D. Technical Support					
1. PSSC	10/--	15/--	8/--	2/--	35/--
2. Other costs (e.g., transmission, receiving, studio)	4/18**	40/40	20/120	--/240	64/418
E. TOTAL COSTS	$89/52	$172/159	$72/600	$26/1,240	$359/2,051

*1978 dollars.

**DRI assumes that the use of CTS for demonstration purposes, including repositioning as necessary and the use of transportable earth stations, is government furnished through NASA/PSSC.

EXHIBIT 7.3. OVERALL COST-SHARING BETWEEN NIE AND OTHER SOURCES ($ x 000)*

YEAR	NIE		OTHER		TOTALS	
	$	%	$	%	$	%
1	286.1	85	52.0	15	338.1	10.9
2	382.9	70	159.0	30	541.9	17.4
3	231.5	28	600.0	72	831.5	26.7
4	160.7	11	1,240.0	89	1,400.7	45.0
4-YEAR TOTALS	1,061.2	34	2,051.0	66	3,112.2	100.0

*1978 dollars.